HITACHI

SERVICE MANUAL

TK | No.3128E

VT-F430A/F430AW

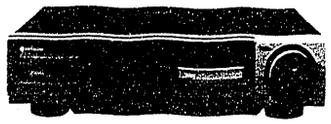


PHOTO : VT–F430A

Technical Data

SPECIFICATIONS

Recording:	Rotary two head Helical Scan Azimuth Recording
Video:	NTSC Color EIA Standard
Cassette:	VHS Type
Heads:	5 video heads: 2 for SP 2 for EP 1 Flying erase head 2 Hi-Fi audio heads 1 Full track audio/video erase head 1 Combination head for control track, audio erase and audio record/play (3 heads/single housing)
Tape Speed:	33.35 mm/sec (SP), 16.67 mm/sec (LP) (playback only), 11.12 mm/sec (EP)
Tape Width:	12.7 mm
RF Output:	Channel 3 or Channel 4
RF Input:	UHF/VHF 75 ohm
Tuning Range:	VHF LOW CH, 2 ~ 6 (54 MHz – 88 MHz) VHF MID CH, A-5 ~ A-1 and A ~ I (90 MHz – 174 MHz) CATV VHF HIGH CH, 7 ~ 13 (174 MHz – 216 MHz) VHF SUPER CH, J ~ W (216 MHz – 300 MHz) CATV VHF HYPER CH, W_{+1} ~ W_{+28} (300 MHz – 468 MHz) CATV UHF CH, 14 – 69, W_{+29} ~ W_{+84} (468 MHz – 798 MHz)
Video Input:	1 – 2 Vp-p 75 ohm Unbalanced
Video Output:	1 Vp-p 75 ohm Unbalanced
Audio Input:	316 mV rms (–7.8 dB) 47 kohm
Audio Output:	316 mV rms (–7.8 dB) 1.5 kohm
Video Recording S/N:	Better than 46 dB (SP), Better than 40 dB (EP)
Horizontal Resolution:	240 lines (SP), 230 lines (EP)
Audio Response:	50 Hz – 10 kHz (SP), 100 Hz – 6 kHz (EP)
Audio S/N:	Better than 43 dB (SP), Better than 40 dB (EP)
Hi-Fi Audio	
Frequency Range:	20 Hz to 20 kHz
Dynamic Range:	90 dB
Wow and Flutter:	Less than 0.005% WRMS
Power Input:	AC 120V 60 Hz
Power Consumption:	31W Nominal
Cabinet Size:	17-1/8"(W) x 4"(H) x 15-3/16"(D) 43.5(W) x 10.1(H) x 38.4(D) cm
Weight:	16.3 lbs (7.4 kg)
Accessories:	1 – Coaxial cable 1 – Remote control unit 2 – Batteries 1 – Power plug adapter 1 – Audio/video connection cord

Design and Specifications subject to change without notice.

VHS

This video deck is a VHS type video recorder. For proper operation, only the VHS type cassette must be used.

MANUALS RELATED TO THE VT-F430A

Name of Manual	Language	Manual No.	Chapters included
Technical Data	English	3128E	Chapters 1-6
Technical Information	English	3129E	---

SPECIFICATIONS AND PARTS ARE SUBJECT TO CHANGE FOR IMPROVEMENT

VIDEO CASSETTE RECORDER

September 1989 TOKAI WORKS

CONTENTS

CHAPTER 1

SAFETY PRECAUTION 1-1
COMPARISON WITH PREVIOUS MODEL 1-2
CONTROLS AND FEATURES 1-3
SETTING THE CLOCK 1-5
CHANNEL TUNING 1-5
RECORDING TV PROGRAMS 1-6
PLAYBACK 1-7
PLAYBACK USING JOB/SHUTTLE 1-8
ON SCREEN DISPLAY 1-9
PICTURE SEARCH 1-9
VCR FUNCTION SETTING 1-10
TIMER RECORDING 1-11
RECALLING THE PROGRAM 1-12
CLEARING INFORMATION FROM A PROGRAM 1-13
PROGRAM MEMO 1-13
OFF TIMER 1-13
VCR1/VCR2/TV SELECT SWITCH 1-13

CHAPTER 2

DISASSEMBLY
1. NAMES AND LOCATIONS OF CIRCUIT BOARDS ... 2-1
2. CASE REMOVAL
   1. Top Cover 2-1
   2. Bottom Cover 2-1
   3. Front Panel 2-2
   4. Front Door 2-2
   5. Front Jack Cover 2-3
   6. Jog/Shuttle Dial 2-3
3. CIRCUIT BOARD REMOVAL
   1. Jog Dial Circuit Board 2-3
   2. Relay Circuit Board 2-3
   3. Front Switch Circuit Board 2-3
   4. Timer Circuit Board 2-4
   5. SSJ Circuit Board 2-4
   6. Y/Chroma and Audio Circuit Boards 2-4
   7. Power Transformer and Regulator IC Circuit Board 2-5
   8. Pre/Rec Amp Circuit Board 2-5
   9. Wiring Circuit Board 2-5
   10. Front Jack Circuit Board 2-5
   11. Sensor/Motor Drive Circuit Board 2-5
4. IDENTIFICATIONS AND LOCATIONS OF MAIN MECHANICAL COMPONENTS 2-6
5. CASSETTE LOADING MECHANISM REMOVAL
   1. Cassette Loading Mechanism 2-8
   2. Loading Gear Assembly, Chassis Holder, Cassette Holder Assembly and Front Holder 2-8
   3. Cassette Holder Base and Cassette Holders (L/R) 2-8
6. LOADING GEAR REMOVAL
   1. Side Chassis, FL Worm Gear, Door Arm, Worm Wheel and Switch Levers A/B 2-8
7. MAIN MECHANICAL COMPONENTS REMOVAL
   1. Impedance Roller/FE (Full Erase) Head and A/C (Audio/Control) Head 2-9
   2. Upper Cylinder (Video Head) 2-9
   3. Cylinder Motor Assembly 2-9
   4. Capstan Motor Assembly 2-10
   5. Loading Motor/Mechanism State Switch Assembly 2-10
   6. Tension Arm/Tension Band 2-10
   7. Slider Block and Reel Drive Idler ... 2-10
   8. Supply/Take-up Reel Disks 2-11
   9. Pressure Roller Assembly, Supply/Take-up Guide Poles and Supply/Take-up Guide Rollers 2-11
   10. Loading Motor Block, Brake Link Arm and FS Brake Arm 2-11
   11. Load Bracket Assembly and Take-up Brake Assembly and Draw Pin 2-12
   12. Brake Operation Arm, Mode Gear, Worm Wheel, Pressure Roller Operation Arm, Mode Change Arm and Brake Lift Arm 2-12
   13. Cylinder Motor Base and Supply/Take-up Loading Arms 2-13
   14. Take-up Pulley and Clutch Gear Assembly 2-13
   15. Take-up Gear, Change Arm, Change Gear, Relay Gear, FL Change Gear and FL Change Lever 2-13

CHAPTER 3

ELECTRIC CIRCUIT ADJUSTMENT 3-1
Test equipment and tapes necessary for adjustment 3-1
Cautions on adjustments 3-1
Servicing position 3-1
Usable servicing methods 3-2
Adjustment parts location 3-3
1. SERVO CIRCUIT ADJUSTMENTS
   1. Switching Point Adjustment 3-5
   2. Auto Tracking Preset Check 3-5
   3. Vertical Jitter Correction 3-6
   4. Slow Tracking Preset Adjustment 3-6
   5. EP Slow Tracking Preset Adjustment ... 3-7
   6. SP Slow Tracking Preset Adjustment ... 3-7
   7. VISS Rewriting Check 3-8
   8. CTL Pulse Level Check 3-9
   9. Soft Landing Speed Adjustment 3-9
2. VIDEO CIRCUIT ADJUSTMENTS
   1. Y/Chroma Separation Filter Adjustment 3-10
   2. 1H Delay Luminance Level Adjustment 3-10
   3. Chroma Recording Level Adjustment ... 3-11
   4. TINT Adjustment 3-11
3. AUDIO CIRCUIT ADJUSTMENTS
   1. Carrier Frequency Adjustment 3-12
   2. Hi-Fi Audio Playback Level Adjustment 3-12
   3. Recording/Playback Envelope Check ... 3-12
   4. AUDIO OUT-2 Jack Output Level Adjustment 3-13
   5. EE Audio Level Check 3-13
   6. Bass Boost Level Check 3-13
   7. AUDIO Bias Level Adjustment 3-14
   8. MPX Separation Adjustment 3-14
   9. Level Meter Adjustment 3-15
4. OSD AND JACK CIRCUIT BOARD ADJUSTMENTS
   1. Title Recording Level Adjustment 3-16
   2. Character Position Adjustment 3-16

CHAPTER 4

MECHANISM ADJUSTMENT
JIGS AND TAPES FOR ADJUSTMENT 4-1
ADJUSTMENT PARTS LOCATIONS 4-1
MECHANICAL PARTS ADJUSTMENT
   1. Mechanism State Switch Adjustment 4-2
TAPE TRANSPORT SYSTEM PARTS ADJUSTMENT
   1. Reel Disk Height Adjustment 4-3
   2. Tension Pole Position and Tension Adjustment 4-3
   3. Guide Pole Height Adjustment 4-4
   4. Guide Roller Height Adjustment 4-5
   5. Audio/Control (A/C) Head Adjustment .. 4-6
   6. To Set the VTR to the Loading without Inserting a Cassette 4-7
   7. X Value Adjustment 4-8
   8. Adjustment After Replacing Cylinder .. 4-9
   9. Tension/Torque Checks 4-10
   10. Connection Diagrams 4-11
MAINTENANCE/INSPECTION PROCEDURE
   1. Required Maintenance 4-12
   2. Scheduled Maintenance 4-12
   3. Check before Starting Repairs 4-12
   4. Tools Needed for Inspection and Maintenance 4-12
   5. Maintenance Procedures 4-13
   6. Inspection Locations 4-14

CHAPTER 5

SCHEMATIC/CIRCUIT BOARD DIAGRAM 5-1
SERVICE MANUAL ABBREVIATION LIST 5-2
SEMI CONDUCTOR CONFIGURATION 5-4
INTERNAL WIRING DIAGRAM 5-6

	SCHEMATIC DIAGRAM	CIRCUIT BOARD DIAGRAM
IF/TUNER UNIT	5-8	—
TIMER	5-10	5-12
RELAY	5-10	5-13
JOG·DIAL	5-10	5-13
RF CONVERTER	5-14	—
DOOR SWITCH	5-15	—
FRONT SWITCH	5-16	5-16
FRONT JACK	5-17	5-17
AUDIO(AUDIO I/O SECTION)	5-18	5-22
LINE SELECTOR	5-18	5-24
BASS BOOST	5-18	5-25
AUDIO(FM AUDIO SECTION)	5-20	5-22
SSJ(JACK SECTION)	5-26	5-42
SSJ(JOG/EDIT SECTION)	5-28	5-42
WIRING	5-29	5-29
SSJ(REGULATOR SECTION)	5-30	5-42
SSJ(OSD SECTION)	5-31	5-42
PRE/REC AMP	5-32	—
SSJ(SERVO SECTION)	5-34	5-42
SENSOR/MOTOR DRIVE	5-37	5-36
CAPSTAN MOTOR DRIVE	5-36	—
SSJ		
(SYSTEM CONTROL SECTION)	5-38	5-42
(SUB μP SECTION)	5-40	5-42
Y/CHROMA	5-46	5-48
POWER TRANS.(FOR AW)	5-50	5-50
REGULATOR(FOR AW)	5-51	5-54
POWER TRANS.(FOR A)	5-52	5-52
REGULATOR(FOR A)	5-53	5-54
REMOTE CONTROL	5-55	—
SERVO WAVEFORMS	5-35	
Y/CHROMA WAVEFORMS	5-49	

CHAPTER 6

REPLACEMENT PARTS LIST
ELECTRICAL PARTS LIST 6-1
MECHANICAL PARTS LIST 6-7
EXPLODED VIEW
CABINET SECTION 6-9
CASSETTE LOADING MECHANISM SECTION 6-10
CHASSIS SECTION 6-11
REMOTE CONTROL SECTION 6-13

CHAPTER 1

SAFETY PRECAUTIONS

NOTICE: Comply with all cautions and safety related notes located on or inside the cabinet and on the chassis.

1. When replacing a chassis in the instrument, all the protective devices must be put back in place, such as barriers, non-metallic knobs, adjustment and compartment covers/shields, isolation resistors/capacitors, etc.
2. When service is required, observe the original lead-dress. Extra precautions should be taken to assure correct lead dress in the high voltage circuit.
3. Always use the manufacturer's replacement components. Especially critical components as indicated on the circuit diagram should not be replaced by other manufacturer's. Furthermore, where a short-circuit has occurred, replace those components that indicate evidence of overheating.
4. Before returning an instrument to the customer, the service technician must thoroughly test the unit to be certain that it is completely safe to operate without danger of electrical shock, and be sure that no protective device built into the instrument by the manufacturer has become defective or inadvertently defeated during servicing.

Therefore, the following checks should be performed for the continued protection of the customer and service technician.

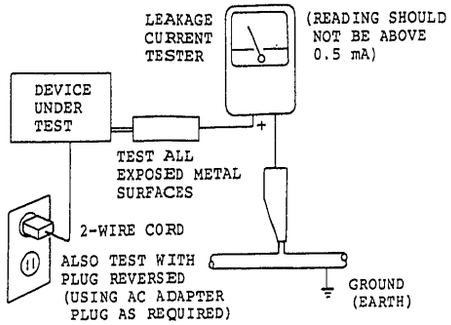
Leakage Current Cold Check

With the AC plug removed from the AC120V, 60Hz source, place a jumper across the two plug prongs. Turns the AC power switch on. Using an insulation tester (DC500V), connect one lead to the jumpered AC plug and touch the other lead to exposed metal parts (antennas, screwheads, metal overlays, control shafts, etc.), particularly any exposed metal part having a return path to the chassis. Exposed metal parts having a return path to the chassis should have a minimum resistor reading of 0.3 Mohm and a maximum resistor reading of 5 Mohm. Any resistor value below or above this range indicates an abnormality which requires corrective action. Exposed metal parts not having a return path to the chassis will indicate an open circuit.

Leakage Current Hot Check

Plug the AC line cord directly into a AC120V, 60 Hz outlet (do not use an isolation transformer for this check).

Turn the AC power switch on. Using a "Leakage Current Tester", measure for current from all exposed metal parts of the cabinet (antennas, screwheads, metal overlays, control shaft, etc.), particularly an exposed metal part having a return path to the chassis, to a known ground (earth) (water pipe, conduit, etc.). Any current measured must not exceed 0.5 mA.


LEAKAGE CURRENT TESTER
(READING SHOULD NOT BE ABOVE 0.5 mA)
DEVICE UNDER TEST
TEST ALL EXPOSED METAL SURFACES
2-WIRE CORD
ALSO TEST WITH PLUG REVERSED (USING AC ADAPTER PLUG AS REQUIRED)
GROUND (EARTH)

AC Leakage Test

ANY MEASUREMENTS NOT WITHIN THE LIMITS OUTLINED ABOVE ARE INDICATIVE OF A POTENTIAL SHOCK HAZARD AND MUST BE CORRECTED BEFORE RETURNING THE UNIT TO THE CUSTOMER.

PRODUCT SAFETY NOTICE

Many electrical and mechanical parts have special safety-related characteristics. These are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this Service Manual.
Electrical components having such features are identified by marking with a ⚠ on the schematics and on the parts list in this Service Manual.
The use of a substitute replacement component which does not have the same safety characteristics as the HITACHI recommended replacement one, shown in the parts list in this Service Manual, may create shock, fire, or other hazards.
Product safety is continuously under review and new instructions are issued from time to time. For the latest information, always consult the current HITACHI Service Manual. A subscription to, or additional copies of, HITACHI Service Manual may be obtained at a nominal charge from HITACHI SALES CORPORATION.

FOR CANADA

CAUTION AGAINST FUSE REPLACEMENT

FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACE ONLY WITH SAME TYPE AND SAME RATING FUSE IN ACCORDANCE WITH THE FUSE SYMBOL LABEL.

The following is the indication of the fuse symbol label which is affixed adjacent to the fuse in the equipment.

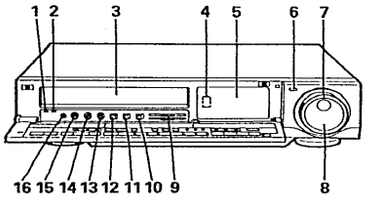
* Example

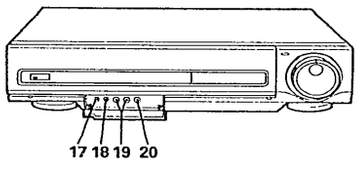
This symbol indicates Fast Operating Type 2A, 250V Fuse.

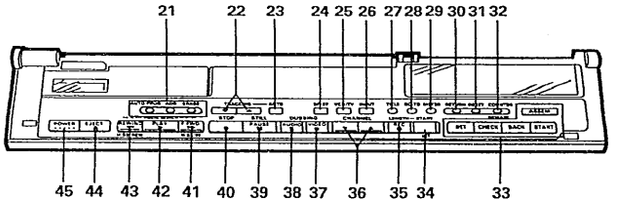
COMPARISON WITH PREVIOUS MODEL

	ITEM		VT-F430A		VT-3400A	
FEATURES	REC/PLAY SYSTEM		VHS Hi-Fi		VHS Hi-Fi	
	COMB FILTER		USED (Y/CHROMA)		USED (CHROMA)	
	TIMER REC PROGRAM		8 PROGRAMS/1 YEAR		4 PROGRAMS/1 YEAR	
	BASS BOOST		PROVIDED		NOT PROVIDED	
	A. DUB		PROVIDED		NOT PROVIDED	
	V. DUB		PROVIDED		NOT PROVIDED	
	JOG/SHUTTLE		PROVIDED		NOT PROVIDED	
	AUTO TRACKING		PROVIDED		NOT PROVIDED	
	Hi-Fi MIX		PROVIDED		NOT PROVIDED	
	CHROMA LEVEL CONTROL		PROVIDED		NOT PROVIDED	
	EDIT SWITCH		PROVIDED		NOT PROVIDED	
CHASSIS	BASIC CHASSIS TYPE		ZF		PZ	
	VIDEO HEAD		DA4 HEAD+Hi-Fi		DA4 HEAD+Hi-Fi	
	FLYING ERASE HEAD		PROVIDED		NOT PROVIDED	
	FULL LOADING ARM		PROVIDED		NOT PROVIDED	
	HALF LOADING ARM		NOT PROVIDED		PROVIDED	
MAIN CONTROL ICs	VIDEO SYSTEM	LUMINANCE PROCESS	HT4932B	(IC201)	HT4885S	(IC201)
		CCD 1H DELAY	MSM7400RS	(IC202)	——	
		CHROMA PROCESS	HA118108NT	(IC204)	BX7616	(IC202)
		COLOR LEVEL	HTS7158C	(IC205)	——	
		COLOR NR	HES8089	(IC206)	——	
		NOISE CANCELLER	——		BX7521	(IC203)
	AUDIO SYSTEM	INPUT/OUTPUT SW	BA7730S	(IC501)	——	
		PNR & MOD./DEMOD.	BA7700K1,XRA7700K	(IC502)	——	
		LINEAR AUDIO	BA7767AS,XRA7767A	(IC401)	——	
		BASS BOOST AMP	RC4558	(IC1531,IC1532)	——	
		LINE SW	BU4053	(IC1511)	——	
		INPUT SELECT/MODE SELECT	——		HA12139NT	(IC1501)
		FM AUDIO PROCESS	——		HA12118NT	(IC1505)
		PEAK NOISE REDUCTION	——		HA12114NT	(IC1504)
	MPX	MPX DECODE	SBX1475-01	(IC1301)	SBX1475-01	(IC1301)
	OSD	OSD μP	M50554-149SP	(IC1401)	——	
		SYNC DET./SYNC GEN.	NJM2229S	(IC1402)	——	
		OSD MODULE	——		TYK8830(For U)	(IC754)
		OSD MODULE	——		TYK8831(For C)	(IC754)
	SERVO	SERVO	HD49741NT	(IC601)	——	
		SPEED CTL	BA6303	(IC651)	——	
		SIGNAL SWITCH	μPD4066C	(IC652)	——	
		CYLINDER MOTOR DRIVE	BA6459P1,XRA6459P	(IC1651)	LB1684A	(IC603)
		AMP	——		LA7116	(IC602)
		SPEED/PHASE CONTROL	——		XRU2748S	(IC601)
	SYSTEM CONTROL	SYSTEM CONTROL μP	HD4074019A165	(IC901)	——	
		LOADING MOTOR DRIVE	BA6209U4	(IC902)	BA6209U4	(IC753)
		END/REEL SIG. AMP	BX7716	(IC903)	——	
		AUTO TRACKING μP	M50727-141SP	(IC971)	——	
		AUTO TRACK. CONTROL	HES8079	(IC1971)	——	
		LEVEL METER CONTROL	BA6138	(IC1501)	——	
		MAIN μP	——		CXP5058-183	(IC751)
	TIMER	TIMER μP	M50957-225SP	(IC751)	M50925-302SP	(IC1721)
		EAROM	M6M80021P	(IC752)	——	

CONTROLS AND FEATURES

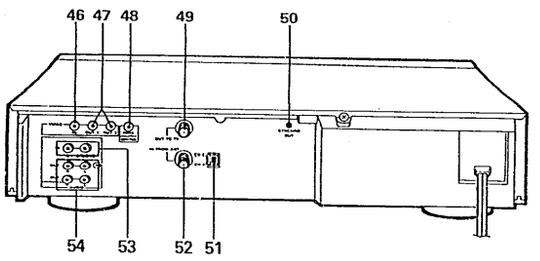




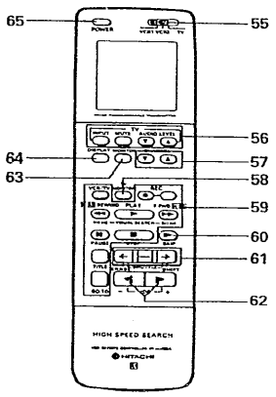


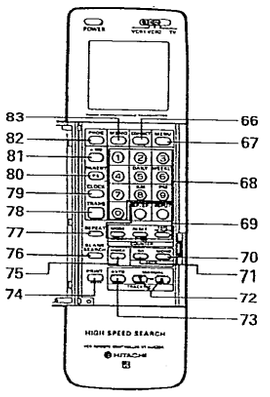
1. **POWER INDICATOR**
   Will light when the power is turned on.
2. **TAPE-IN INDICATOR**
   Lights when cassette is loaded in the compartment.
3. **CASSETTE COMPARTMENT**
   Insert a cassette in through a door, and loading will be completed automatically.
   Note: Power is turned on automatically when the cassette is loaded.
4. **INFRARED RAY RECEIVING SECTION**
   Receives the infrared ray from remote control unit.
5. **DISPLAY**
6. **DOOR OPEN BUTTON**
   Press to open door.
7. **SHUTTLE RING**
   During play, turn this ring to speed up or slow down playback speed at a smooth variable rate for everything from slow motion to forward search. Removing the hand from the ring restores a still picture.
8. **JOG DIAL**
   Every turn of the jog dial to a click position during still play moves the tape forward one frame at a time.
9. **RECORDING LEVEL CONTROLS**
   Set these controls to a reading of 5 (center click position) normally. The recording level is automatically adjusted to an optimum level. Set the controls if you want to adjust the recording level manually.
10. **AUDIO MIX SWITCH**
    Normally set it to off. When different sounds are recorded on the Hi-Fi and linear tracks, set this switch to on; you can hear both sounds at the same time.
11. **EDIT SWITCH**
    Set this switch to on during playback to emphasize outlines in dubbing. Will not work in modes other than playback.
12. **SPECTRA SONIC SWITCH**
    Turn this switch to on during playback or TV viewing for more powerful sound with emphasized bass.
13. **COLOR CONTROL**
    Adjusts color depth during playback. Normally set it to center click position. COLOR control works only in playback.
14. **SHARPNESS CONTROL**
    Used when playing a tape. Adjust for best picture.
15. **PHONES LEVEL CONTROL**
    For adjusting headphone volume. Turning this knob also adjusts output from audio output jack 2.
16. **PHONES SOCKET**
    Plug in a stereo headphone for private listening.
17. **SYNCHRO IN JACK**
    Connect the pause cable of a video camera here. Starting and stopping recording can be controlled by operating the start/stop button on the camera. To synchro edit, connect this jack to the other VCR's SYNCHRO OUT jack.
18. **MIC JACK**
    Plugs in a microphone for audio dubbing.
19. **AUDIO IN**
    Receive audio signals from a stereo system or another VCR. AUDIO IN (L) handles the left-channel stereo sound or monaural sound. If you connect an audio source to only AUDIO IN (L), the same sound is recorded on Hi-Fi tracks (L) and (R) in monaural.
20. **VIDEO IN**
    Receives video signal from a video camera or another VCR.
21. **CHANNEL PROGRAMMING CONTROLS**
    Program channels for channel up and down selection with these controls.
22. **TRACKING CONTROL BUTTONS**
    To minimize noise in playback. May also be used during visual search to move the noise bars up or down on the screen.
23. **AUTO TRACKING BUTTON**
    When playback is started, the auto tracking function operates normally if this button is not pressed. When this button is pressed after tracking has been adjusted manually, auto tracking operates again.
24. **TAPE SPEED SELECT BUTTON**
    Recording time using Cassette tape T-160:
    EP: 8 hours SP: 2.6 hours
    Notes:
    - Playback speed automatically corresponds with recorded speed.
    - This VCR cannot record in LP mode, but can play LP recorded tapes.
25. **VCR/TV SELECT BUTTON**
    Selects the signal to be viewed.
    The "VCR" appears for about 5 seconds when the unit is in VCR mode and the signal received by the VCR is displayed on the TV screen. With the "TV" selected ("TV" appears for about 5 seconds), the broadcast signal is received directly by your TV set. When the VCR power is turned off, the VCR automatically switches to "TV".
26. **INPUT SELECT BUTTON**
    Press to select tuner position to record or view an off-the-air TV program (through the VCR's built-in tuner), "SC" position to record a program which being transmitted simultaneously by television and radio broadcast stations, the "L1" position to record or view the program input through the video and audio line input jacks on the rear of the VCR or the "L2" position to record or view the program input through the video and audio line input jacks on the front of the VCR.
27. **TITLE BUTTON**
    Use to create titles.
28. **GO-TO BUTTON**
    Use linear time counter to move tape so many minutes forward or backward from the present position.
29. **METER BUTTON**
    Press METER button to turn level meter on or off and to adjust Hi-Fi sound tracking.
30. **RETURN BUTTON**
    Press RETURN button to bring the tape back to the position where the linear time counter reads "0:00.00".
31. **RESET/T-160 BUTTON**
    Resets linear time counter to "0:00.00" when the linear time counter is displayed and automatically compensates the Tape Remaining display for using T-160 tapes when Tape Remaining mode is selected.
32. **COUNTER/REMAIN SELECT BUTTON**
    The VCR display changes in the order clock, linear time counter, tape remaining and back to clock each time this button is pressed.
33. **ASSEMBLE EDIT BUTTONS**
    Use these buttons to create an edit program during "Auto Assemble Edit" and "Synchro Edit".
34. **IRT START BUTTON**
    IRT allows unattended recording without programming the timer.
35. **RECORD BUTTON**
    Press to start recording.
36. **CHANNEL SELECT BUTTONS**
    Select the channels you wish to view or to record by pressing these buttons.
37. **VIDEO DUBBING BUTTON**
    Turns the video dubbing features on. To turn this feature off, press STOP button.
38. **AUDIO DUBBING BUTTON**
    Turns the audio dubbing features on. To turn this feature off, press STOP button.
39. **PAUSE/STILL BUTTON**
    Press to pause during recording or playback.
40. **STOP BUTTON**
    Press to stop tape. The STOP button must be pressed between "RECORD" and any other operation.
41. **FAST FORWARD/VISUAL SEARCH BUTTON**
    Press to activate fast forward.
    Press this button during playback, and forward playback picture at high speed can be seen.
42. **PLAY BUTTON**
    Press to start play.
    Note: When the cassette (with erase prevention tab removed) is loaded, playback starts automatically.
43. **REWIND/VISUAL SEARCH BUTTON**
    Press to start rewind.
    Press this button during playback, and reverse playback picture at high speed can be seen.
44. **EJECT BUTTON**
    When this button is pressed in modes other than recording, the tape stops, and the cassette is ejected.
45. **POWER BUTTON**
    Turn system power on and off.

CONTROLS AND FEATURES (Continued)



46. **VIDEO IN**
    Receives video signal from a video camera or another VCR.
47. **VIDEO OUT**
    For connection to monitor TV.
48. **VIDEO PRINTER CONTROL JACK**
    Connect this jack to the PRINTER CONTROL jack on the VY-15A Printer (optional accessory) for high-clarity picture print-outs.
49. **ANTENNA OUTPUT**
    Connect this terminal to the antenna terminal on the back of the TV.
50. **SYNCHRO OUT JACK**
    Connect the SYNCHRO OUT jack to the SYNCHRO IN jack of the recording VCR in order to synchro edit with this VCR in play mode.
51. **RF CONVERTER SWITCH**
    Set this switch to whichever channel (CH3 or CH4) is unused in your area.
52. **ANTENNA INPUT**
    Connect the UHF and/or VHF antenna to this terminal.
53. **AUDIO IN**
    Receive audio signals from a stereo system or another VCR. AUDIO IN (L) handles the left-channel stereo sound or monaural sound. If you connect an audio source to only AUDIO IN (L), the same sound is recorded on Hi-Fi tracks (L) and (R) in monaural.
54. **AUDIO OUT**
    For a connection to a monitor or another VCR.
    Output from AUDIO OUT 2 can be varied by the front panel's PHONES LEVEL control.





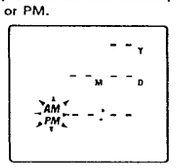
55. **VCR1/VCR2/TV SELECT SWITCH**
    To operate the VT-F430AW VCR using this remote controller, set the switch to VCR1. To operate a Hitachi VCR other than the VT-F430AW VCR or a TV, select either VCR2 or TV.
56. **TV CONTROL BUTTONS**
    Used for controlling the TV.
    You need not set the VCR1/VCR2/TV select switch to "TV" before pressing these buttons.
57. **CHANNEL SELECT BUTTONS**
    Select the channels you wish to view or to record by pressing these buttons.
58. **TV MONITOR BUTTON**
    Press TV MONITOR button to view TV program during playback. To return to normal play viewing, press TV MONITOR button once more.
59. **VCR CONTROL BUTTONS**
    These buttons (except for "REC" buttons) function same as the buttons on your VCR.
    Note: The REC buttons must be pressed simultaneously to start recording.
60. **SKIP BUTTON**
    Press SKIP button during playback for forward high-speed search that lasts for about 30-second playing time, then goes back to normal play mode. Use this function to skip commercials, etc.
61. **SHUTTLE BUTTONS**
    Pressing the right or left SHUTTLE button once is the same as turning the SHUTTLE ring. Press ⟷ in the center to return to a still picture.
62. **JOG BUTTONS**
    Functions the same as turning the JOG DIAL. Frames cannot be advanced continuously even if the button is held depressed.
63. **AUDIO MONITOR BUTTON**
    For audio selection during playback. Press AUDIO MONITOR button to change audio from Hi-Fi to Linear and back again. Normally, select Hi-Fi audio. When Hi-Fi audio is selected, [L] and [R] on the level meter will light.
64. **DISPLAY BUTTON**
    1st Press .... Calls up the mode display on TV screen.
    2nd Press (before display disappears) ... Erases the display, leaving the display at the bottom of the screen as it is.
    3rd Press .... Defeats the display function. Useful to prevent the On-screen display recording.
65. **POWER BUTTON**
    Turn system power on and off.
66. **CORRECT BUTTON**
    Used for programming the timer.
67. **MENU BUTTON**
    Use MENU button to check or cancel timer programming, to operate the off-timer function, or to change VCR modes.
68. **NUMBER BUTTONS "0" THROUGH "9"**
    Select any channel (whether or not it is in the "Tuner Scan List") by pressing two buttons. (Press "0" and then "8" for channel 8.) The number buttons are also used for setting the clock and programming the timer.
69. **VCR CONTROL BUTTONS**
    These buttons function same as the buttons on your VCR.
70. **MONO BUTTON**
    When a stereo broadcast is received but the stereo signal is noisy from a weak signal station, for example, press the button to turn on monaural mode. The audio you receive will be monaural. Monaural reception may be better than a noisy stereo signal. Normally press this button to turn off the monaural mode.
71. **SAP SET (Second Audio Program) BUTTON**
    Press this button to turn on "SA SET" indicator on the TV screen to record the SA (Second Audio Program) broadcast. Normally press the button again to turn off the "SA SET" indicator on the TV screen.
72. **TRACKING CONTROL BUTTONS**
    These buttons function same as the buttons on your VCR.
73. **AUTO TRACKING BUTTON**
    This button functions same as the button on your VCR.
74. **PRINT BUTTON**
    If a video printer (optional accessory) is connected, press PRINT button to control the printer.
75. **INDEX BUTTON**
    Activates the Program Index System. An on-screen display appears on the TV prompting you to enter a program number.
76. **BLANK SEARCH BUTTON**
    Use this button to search for unrecorded sections on tape and for the start of recorded events.
77. **REPEAT BUTTON**
    Press to repeat play.
78. **TRANS BUTTON**
    Press TRANS button to transmit the programmed information to the VCR.
79. **CLOCK BUTTON**
    Press CLOCK button to set clock.
80. **PL (Parent Lock) BUTTON**
    When this button and button "6" are pressed simultaneously, no button on the front panel of the VCR can be operated. This prevents children from operating the VCR without their parents approval.
    To release the lock, press the PL button and button "6" simultaneously or press the POWER button of the remote control.
81. **100 BUTTON**
    Used to select TV channels.
    Press "100", "2", "3" in this order to select channel 123.
    Press "100", "0" and "5" for channel 105.
82. **PROG BUTTON**
    Used for programming the timer.
83. **MEMO BUTTON**
    Press this button to store the information programmed for the timer in the memory of the remote control.

SETTING THE CLOCK

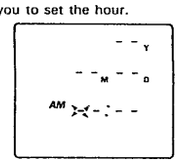
Things to know before starting

- First set the clock on the remote control, then transmit the information to the VCR.
- The clock uses the 12-hour system.
- When you first plug in your VCR, the clock will read "– – : – –".
- The VCR power may be on or off.
- If you press a wrong digit, press the CORRECT button repeatedly until the digit to be corrected flashes and then enter the correct digit.

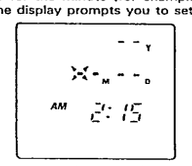
1. Press CLOCK button once.
   The display on the remote control prompts you to select AM or PM.



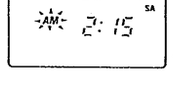
2. Press "8" for AM or "9" for PM. The display prompts you to set the hour.

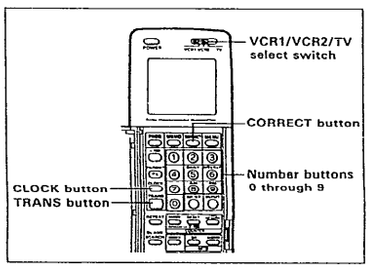


3. Set the hour by pressing two number buttons and two more for the minute (for example, 0 2 1 5 for 2:15). The display prompts you to set the date.

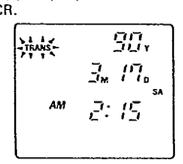


4. Set the date by pressing six digits in order of month, day and year (for example, 0 3 1 7 9 0 for March 17, 1990). The day of the week will appear when you have entered all six digits for the date.
   Note: Always press "0" before single-digit month and days.

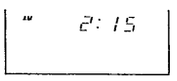




5. Press CLOCK button two times.
   The display prompts you to transmit the information to the VCR.



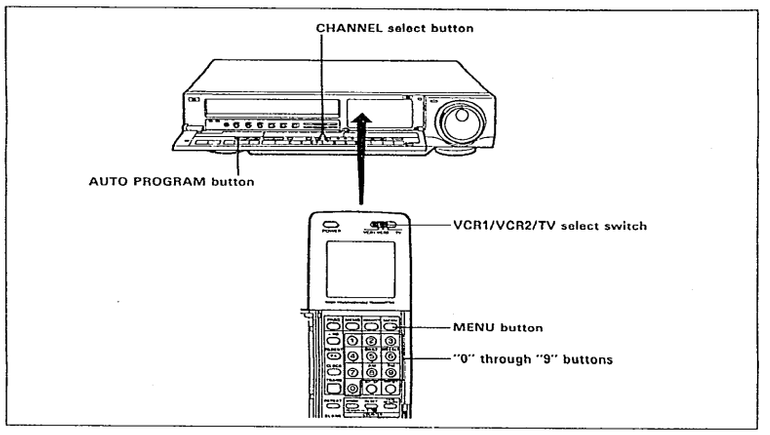
6. Aim the remote control unit at the receiver on the front panel of the VCR and then press the TRANS button. The time will appear in the VCR's display to show that information has been transmitted.
   Make sure that the VCR1/VCR2/TV select switch is set to "VCR1" when transmitting information to the VCR.



NOTES:
1. If the programming is interrupted for more than one minute, the display goes off. Start from the beginning and program it over again.
2. The clock must be set to the correct time before programming the timer for unattended recording or using the Instant Recording Timer (IRT) feature.
3. To correct the VCR clock after transmitting the information, press CLOCK button so that TRANS is flashing on and off.
   Press CORRECT button repeatedly until the incorrect digit flashes, and then input correct information. Then press TRANS button to send the corrected information to the VCR.
4. If power is interrupted for more than 30 minutes, "– – : – –" will appear on the display and Clock and Programming will need to be reset.

CHANNEL TUNING

The automatic programming feature makes it easy and convenient to program the TV station into the tuner's memory.
Automatic programming is usually a "one-time" procedure, but you will need to repeat it if you move to a location that has different channels.
Note: The channels once you have preset will be held in memory of the VCR if you unplug the power cord.



1. Turn on the power of both VCR and TV.
2. Be sure that the TV is set to the video channel (channel 3 or 4).
3. Aim the remote control unit at the receiver on the front panel of the VCR. Make sure that the VCR1/VCR2/TV select switch is set to "VCR1".
4. Press the MENU button on the remote control unit.
   The "MENU", as illustrated, appears on the TV screen.

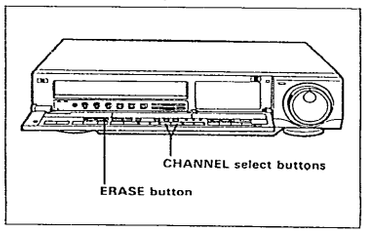
5. Press button "3" for VCR function setting. The VCR function setting "MENU" appears on the TV screen.

6. Press button "5" to select "CATV (YES) or (NO)".
   If your VCR is connected to a home antenna system, select "NO"; select "YES" when your VCR is connected to a cable antenna. Switching is performed between "YES" and "NO" on the TV screen every time button "5" is pressed.

7. Press MENU button to return to TV screen.
8. Press "AUTO PROG" button on the VCR.
   The tuner will automatically cycle through all available channels in the area and place them in the tuner's memory. It takes about 80 seconds. The channel number will stop changing when the tuner is finished cycling. Programming is now completed.
   You can select the active channels by pressing the CHANNEL select buttons.

■ Eliminating unwanted preset channels

You may want to have only a few favorite channels in the tuner's memory so you can select them more quickly with the CHANNEL select button.
Occasionally automatic programming may include a vacant channel in the tuner's memory if there happened to be some sort of "noise" or "stray signal" on the channel when the tuner was programmed. This procedure explains how to delete any unwanted channels from the tuner's memory.



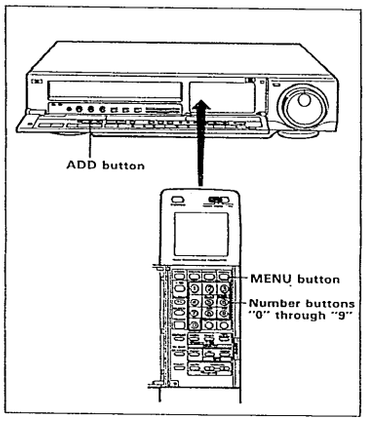
1. Press the CHANNEL select button until the unwanted channel is tuned.
2. Press the ERASE button.
3. Repeat steps 1 and 2 until all unwanted channels have been eliminated.

Note: To restore the erased channel, follow steps 1 through 6 of "Adding channels to the tuner's memory" at right.

NOTE: If you view and record one or more local UHF channels that your cable system does not offer, first, program the cable-TV channels. Then preset the desired UHF channels by following the "Adding channels to the tuner's memory" after selecting the "CATV [NO]".

■ Adding channels to the tuner's memory

You may have deleted a channel from the tuner's memory and want to put it back. Occasionally automatic programming may "miss" an active channel because the signal is very weak or because the channel happened to be "off the air" when the tuner was programmed. Use this procedure to add any channel in the memory.

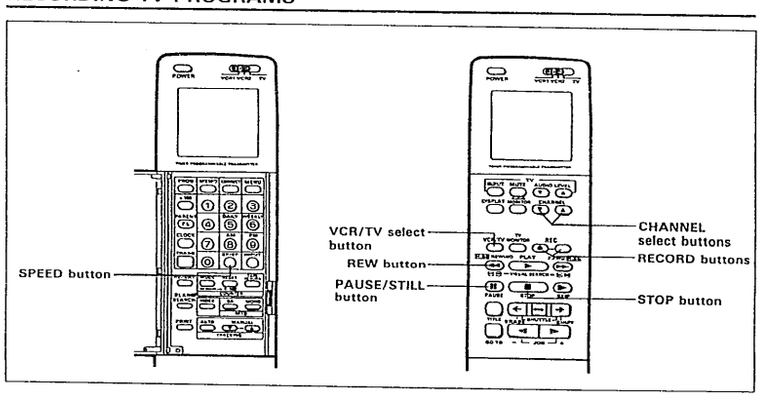


1. Follow steps 1 through 6 on page 20, and select CATV [YES] or [NO] as desired.
2. Press MENU button to return to TV screen.
3. Press two buttons "0" through "9" on the remote control unit to select the desired channel. (Press "0" and then "8" for channel 8.)
4. Press the ADD button.
5. Repeat steps 3 and 4 for additionally desired channel(s) in your area. Now both Normal TV channels and CATV channels have been preset.
6. Select CATV [YES] or [NO] whichever you desire.

■ CATV CHANNEL TABLE

Channel Number on Display	01	02	03	....	13	14	15	....	36	37	38	....	94	95	96	97	98	99	100	101	....	124	125
CATV BROADCAST CHANNEL corresponding to above Channel Number	A-8	2	3	....	13	A	B	....	W	W+1	W+2	....	W-58	A-5	A-4	A-3	A-2	A-1	W+58	W+82	....	W+83	W+84

RECORDING TV PROGRAMS



1. If you wish to view a program being recorded, turn on TV and select the channel 3 or 4 for your video channel.
2. Insert cassette.
   VCR power is turned on automatically.
   Be sure to check that the record safety tab is not missing.
3. Press SPEED button to select "SP" or "EP".
   "SP" speed is recommended when recording.
   Note: Whenever you change the mode, the new mode is displayed on the TV screen automatically for about a few seconds.
4. Select channel to be recorded.
   Note: If the channel desired for recording does not appear on the TV screen, press the VCR/TV select button.
5. Press RECORD button on the VCR or two RECORD buttons on the remote control unit. Recording will start.
   Note: If the erase prevention tab of the cassette has been removed, the cassette is ejected automatically when you press RECORD button.
6. Press PAUSE/STILL button to stop recording temporarily. Press again to release.
   Note: When the REC-PAUSE mode continues for more than 5 minutes, the VCR will automatically change to stop mode to protect the tape.
7. Press STOP button to stop recording.

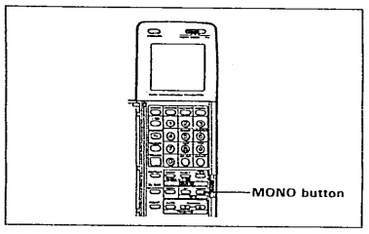
To record one program while viewing another
You can record one program while viewing another by setting the VCR for recording, then pressing the VCR/TV select button to select "TV", and selecting the desired channel on your TV. The recorded program can be viewed later at your convenience.

To change the channel to be recorded while in record mode
During recording, the channel lock function operates and channel cannot be changed if the CHANNEL select button is pressed.
If you wish to change channel, proceed as follows.
1. Press the PAUSE/STILL button.
2. Change channel desired.
3. Press the PAUSE/STILL button to release record pause mode.

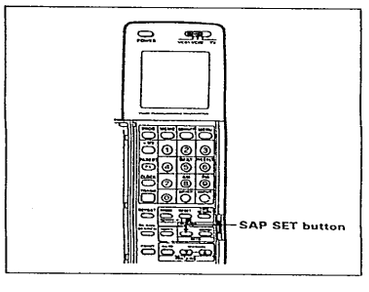
Automatic rewind
The tape will stop and automatically rewind when the end of the tape is reached.
This function does not operate during timer recording and instant recording.

Rewind shut off
If power button is pressed during rewind operation, power will be turned off automatically after the tape has been completely rewound.

Recording broadcast stereo TV
The basic procedure for recording broadcast stereo TV is the same as it is for normal off-the-air recording.
The "ST" indicator will come on in the VCR's display if the station is broadcasting in stereo. Press the RECORD button to start recording.
Note: In some fringe viewing areas, however, the stereo signal may not be strong enough for quality reception. The signal may drift or become noisy. Should that occur, press MONO button on the remote control to select Monaural mode to receive clearer, cleaner sound. Press MONO button again to return to the Stereo mode.

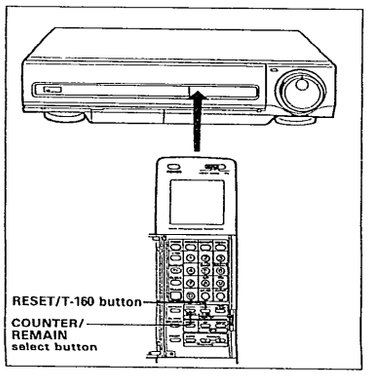


Recording Second Audio Program (SAP)
Some stations transmit the Second Audio Program. When the station broadcasts an SAP, the "SA" indicator will turn on. To record the Second Audio Program, be sure that "MONO" is not displayed on TV screen.
If "MONO" is displayed on TV screen, press MONO button on the remote control to clear the "MONO". Press SAP SET button on the remote control to display "SA SET" on TV screen, and then press the RECORD button to start recording.
Your VCR will record the SAP instead of the normal audio. The SAP will be recorded on both the Linear audio track and Hi-Fi track.

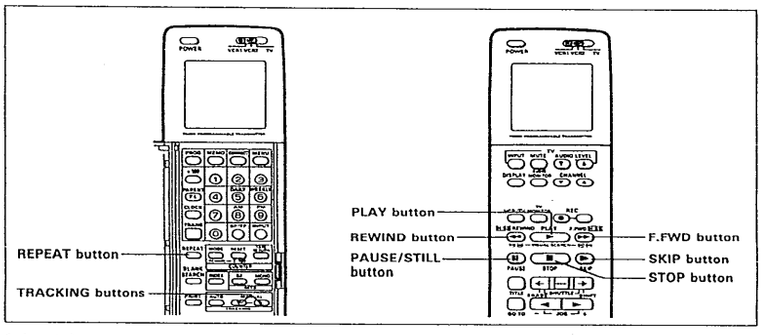


Tape Remaining
This feature automatically calculates and displays the amount of recording or playback tape (assuming the tape is recorded to the end) left on your tape with the exception of the T-160 (eight hour) tape. When the tape remaining feature is used, the tape remaining display appears instead of the linear time counter or clock display — both in the on-screen display of your TV and the fluorescent display on your VCR.
If your VCR is in the linear time counter or clock mode and you wish to use the tape remaining feature, simply press the COUNTER/REMAIN select button until the Tape Remaining is displayed.
The tape remaining will be automatically calculated and displayed assuming that the tape will continue to be recorded (or played) at the current speed.
- Any time the tape speed is changed, or when the tape has just started playing, the system will recalculate the tape remaining. There will be a short delay until the new time is displayed.

Tape Remaining Using the T-160 (eight hour) Tape
If you are using a T-160 (eight hour) tape, press the RESET/T-160 button while the tape remaining display is being used. The tape remaining will be calculated for the T-160 tape and the T-160 indicator will appear on the VCR. There will be a short delay until the new time is displayed.



PLAYBACK



1. Insert the cassette.
   VCR power is turned on automatically.
   Note: When a cassette (with erase prevention tab removed) is loaded, playback starts automatically if the AUTO PLAY feature is turned on. Details of how to turn the AUTO PLAY feature on and off are shown
2. Turn the TV on and select the video channel.
3. Press the PLAY button.
4. Press the STOP button to stop playback.

Auto Tracking
When playback is started, the auto tracking function operates and adjusts tracking automatically so the picture is optimized. "TRACK" flashes in the VCR display for several seconds and then changes to "PLAY" indication.
- Auto tracking may not operate correctly when the tape is scratched or the recorded condition is poor. In this case, press the tracking control button (▼ or ▲) to adjust tracking.
- If the AUTO TRACKING button is pressed after operating the tracking control button (▼ or ▲), auto tracking operates again.

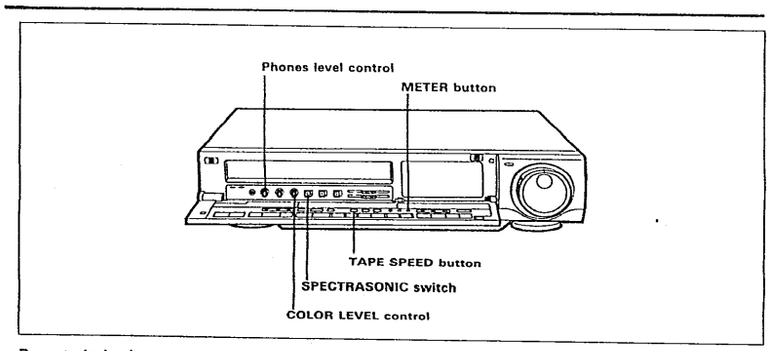
Still playback
When the PAUSE/STILL button is pressed during playback, a still picture can be seen. To start again press PAUSE/STILL button and the VCR will continue playback.

Notes:
- There will be some noise (interference) in the still pictures.
- When the still mode continues for about more than 5 minutes, the VCR will automatically change to stop mode to protect the tape.
- If vertical jitter (shaking) occurs during the still mode, press either TRACKING control button (▲ or ▼) (one by one) to minimize it. Tracking for EP and SP modes can be adjusted separately.

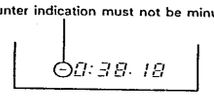
Frame advance
When you press SKIP button on the remote control unit during still (play-pause) mode, one frame at a time can be seen.
Operates only after PAUSE/STILL button has been pressed.

High speed search
This allows you to view the picture from a recorded tape at high speed in both the forward and reverse directions.
Press REW or F.FWD button during playback. Pictures can be viewed at high speed in either the forward or reverse direction.
Press PLAY button to return to normal playback. For higher speed search, press and hold the REW or F.FWD button during playback. Release the button to return to normal playback.
For highest speed search, press and hold down REW or F.FWD during rewind or fast forwarding. Release the button and then press PLAY button to return to normal playback.
Note: The playback picture will have some noise in the visual search mode.

Skip playback
When you press the SKIP button during playback, the tape is searched forward for about 30 seconds of recording time and then the normal playback mode resumes.



Repeat playback
Sections to be viewed can be played back repeatedly. Press REPEAT button during playback when the linear time counter's plus indicator is on.
Note: Counter indication must not be minus.



- The VCR rewinds the tape to counter reading "0:00.00" automatically, then plays it back to the point at which REPEAT button was pressed. That repeat operation continues until STOP, PLAY button, etc. is pressed.
- If there is five or more seconds of unrecorded tape between the point at which REPEAT button was pressed and counter 0:00.00, playback will repeat between 0:00.00 and the unrecorded section.

Spectrasonic switch
Turn SPECTRASONIC switch on for powerful bass-emphasized sound during VCR playback or TV viewing.
- Emphasizes bass from audio output jack and headphone jack.
- Does not emphasize bass of audio from VHF antenna output terminals.
- Make sure not to turn sound up too loud. That will distort sound.

Color level control
Emphasizes color depth of tape being played.
- Standard position is centered.
- Control does not work in modes other than playback.

Phones level control
- Turn the phones level control to adjust the volume from audio output jack 2. This also adjusted the volume from the headphone jack.

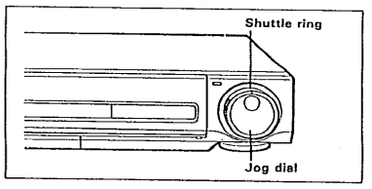
Operating sounds
Electronic beep sounds will be emitted at various times in VCR operation. These beep sounds can be turned off.
- To turn sounds off .....
  With VCR power off, press TAPE SPEED button. The letter "B-OFF" will appear in the VCR's display.
- To turn the sounds back on again .....
  Repeat the above operation, to turn the sounds back on again.

Hi-Fi tracking adjustment
Auto-tracking is operating at all times, but with certain tapes the picture may be clear but the Hi-Fi sound will have noise or even blank spots in it. If that happens, make the following adjustments.
1. Press METER button on the VCR so that the level meter shows tracking.

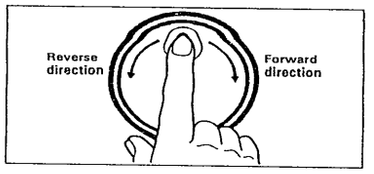
2. Press TRACKING button (+ or −) until the meter is to swing to the greatest extent.
   Now the Hi-Fi tracking adjustment has completed.

PLAYBACK USING JOG/SHUTTLE

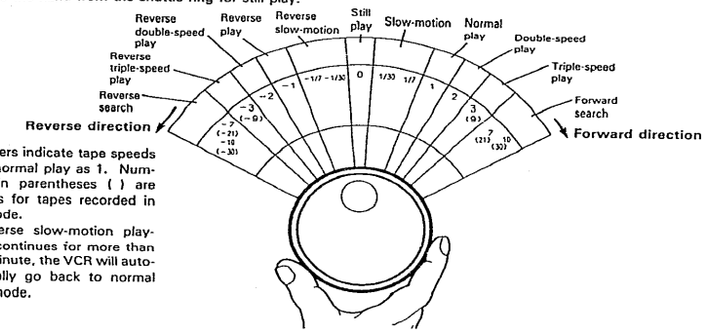
Use of jog/shuttle allows many different kinds of playback; still play, slow-motion play, normal play, double-speed play, triple-speed play, forward search, reverse slow-motion, reverse play, reverse double-speed play, reverse-triple-speed play and reverse search.
- To go back to normal play, just press PLAY button.



■ How to use the jog dial
Turn the jog dial during playback for forward or reverse frame advance.
- Every time the jog dial is brought to where a slight click is felt, the picture moves one frame.
- Release the hand for still play.



■ How to use the shuttle ring
If the shuttle ring is turned during playback, turning the ring to the positions indicated gives those special effects.
- Release the hand from the shuttle ring for still play.



- Numbers indicate tape speeds with normal play as 1. Numbers in parentheses ( ) are speeds for tapes recorded in EP mode.
- If reverse slow-motion playback continues for more than one minute, the VCR will automatically go back to normal play mode.

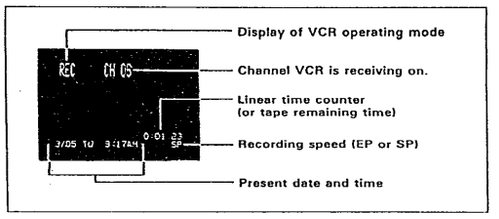
Pressing the SHUTTLE button (⏪ or ⏩) on the remote control during playback gives the same effects as turning the shuttle ring.
- To get still play, press ⏸ button.

Pressing JOG button (◁II or II▷) on the remote control during still play will advance frames one at a time in either forward or reverse.

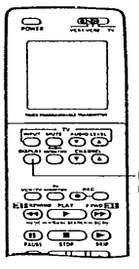
NOTES:
- The picture may have noise, streaking or other distortion when it changes.
- If noise bars appear on TV screen during slow/reverse slow/still mode, first set the VCR to slow mode and then press TRACKING control button (▼ or ▲) to minimize noise bars. Now the noise bars in still mode are eliminated automatically. After adjusting the tracking during slow mode, set the VCR to reverse slow mode and then press TRACKING control button (▼ or ▲) to minimize noise bars.

ON SCREEN DISPLAY

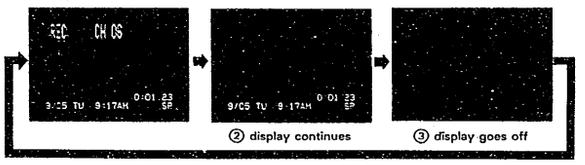
When the VCR is in operation, the following indications will automatically appear on the TV screen.



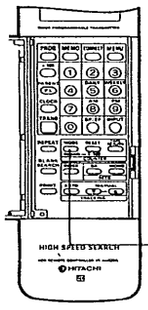
- These indications will be displayed every time the VCR is operated.



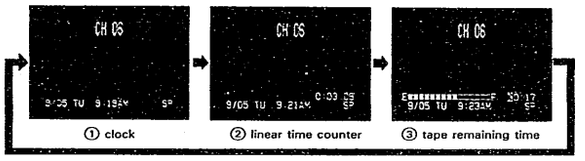
■ **Every press of DISPLAY button changes the TV screen in the following sequence.**



- **To prevent mode from displaying,** select ③ on mode display OFF. The above indications will no longer appear on the TV screen if the VCR is operated. This is convenient during editing and when using this VCR for playback.



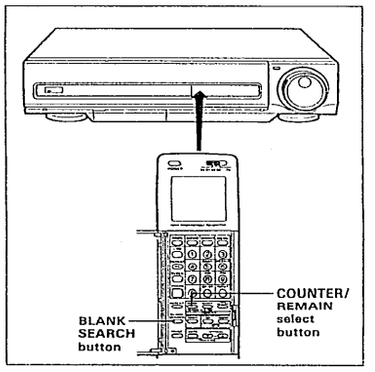
■ **Each time the COUNTER/REMAIN select button is pressed, the TV screen switches as follows. (VCR's display also switches at the same time.)**



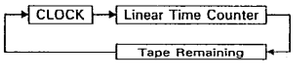
PICTURE SEARCH

■ **Linear time counter**

Shows length of tape run in hours, minutes and seconds.



Press COUNTER/REMAIN select button to select the linear time counter display. Every press of COUNTER/REMAIN select button changes the VCR display and TV screen as follows.



- Counter changes to 0:00.00 when cassette is ejected.
- Tape starts moving from 0:00.00 and counter indicates amount of elapsed time.

Note: The linear time counter does not operate when nothing is recorded on the tape.

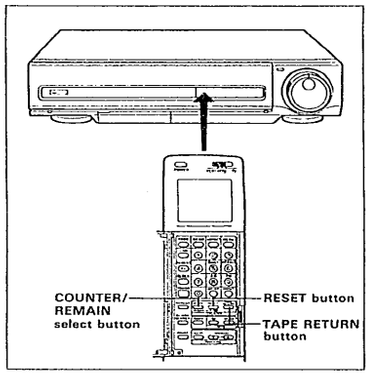
■ **Blank search**

Convenient feature for searching for blank sections on tape.

- To operate blank search, press BLANK SEARCH button in either stop or play mode.
- The VCR fast forwards the tape until it detects an unrecorded section. It then automatically enters the still play mode immediately before the unrecorded section. Recording can then be started at this point.

■ **Tape return function**

This is useful if there is a section of tape you want to view immediately after recording or you want to return to the same point several times.



1. Press COUNTER/REMAIN select button to display the linear time counter reading on the VCR's display.
2. Begin recording or playing back a tape.
3. At the point where you want playback to begin, reset the linear time counter to "0:00.00" by pressing the RESET button.
4. Continue to play or record.
5. Press the STOP button when recording or playback finishes.
6. Press the TAPE RETURN button.

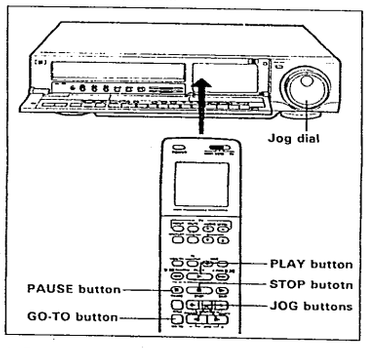
The tape will automatically stop at the pre-selected "0:00.00" position.

Notes:

- The tape will also automatically stop at "0:00.00" during fast forwarding.
- When the TAPE RETURN button (in place of the STOP button) is pressed during normal play or still play, the tape is fast forwarded (or rewound) until the linear time counter reaches the "0:00.00" position.

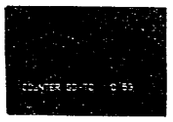
■ **Counter GO-TO function**

Use the linear time counter to conveniently search for positions a designated number of minutes before or after the present position.



1. Press GO-TO button during stop mode. "COUNTER GO-TO 0:00" appears on TV screen.

2. Press JOG button to move a designated number of minutes forward or backward.
   - Press JOG button to move forward or backward in minute units. Pressing and holding JOG button gives consecutive forward or backward movement.
   - The VCR's jog dial can also be used to set the time.



3. Press PLAY, STOP or PAUSE button.
   The tape moves to the position indicated by the numbers 0:00.00 on the TV screen then enters the mode for the button pressed.

■ **Tape indexing**

The indexing system used in your VCR is based on a new VHS Standard Indexing System called "INDEX" (VHS Index Search System). It allows you to directly access specific program segments. The new system used in your VCR will not recognize index marks on tapes made on older VCR's. Likewise, older VCR's cannot recognize the index marks. The INDEX "mark" is recorded automatically every time the REC button is pressed.

These are two methods of indexing.

Note: Normally, an index "mark" is not recorded if PAUSE button is pressed and released during recording. You must press the RECORD button. If you are recording two programs — one immediately following the other — you must press STOP and then RECORD button to insert an index "mark".

If you are making an audio only tape (on video), the VCR will put index marks on the tape when you release record/pause. This allows you to easily index musical selections.

When you do not know the number of the program to be searched from the beginning of tape

1. Press the INDEX button on the remote control unit once during the stop mode.
   The INDEX indicator appears in the display.
   Note: The index menu appears on the TV screen if the TV is turned on.

2. Press the REW or F.FWD button. The tape will rewind or fast forward until an index signal is detected.
3. When the VCR locates an index mark, it will stop and play approximately 15 seconds of the program following the mark. This is long enough for you to recognize the program.
4. The VCR will continue to locate index marks in either direction and play 15 seconds of the program following it until you press PLAY button.
5. When you see the program you want to watch, press PLAY button. The Index Indicator is automatically removed from the VCR display.

When you know the number of the program to be searched from the beginning of tape

1. Press the INDEX button once during the stop mode.
   The INDEX indicator appears in the display.
   Note: The index menu appears on the TV screen if the TV is turned on.

2. Press 10-key buttons "0" – "9" on the remote control unit to select the desired program. For example, when the required program is the 7th, press "0" and "7".

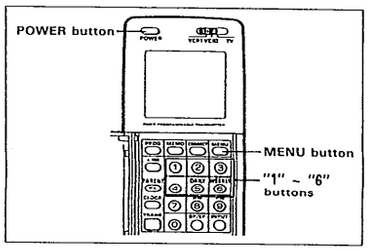
   Note: Programs up to a maximum number of 99 can be selected.
3. Press the PLAY button and the VCR will automatically search for the program number you requested.
4. When the program number you requested is located, the VCR will automatically begin to play and the Index indicator in the VCR will be turned off.

Notes:

- If this is the first time you have used the Index feature since the cassette was inserted,the VCR rewinds the cassette to the beginning to start counting index "marks". If this is not the first time Index is used, the VCR can count the index "marks" without returning to the beginning.
- To use Tape Indexing Feature, the tape must have been recorded on a VCR with the "VHS Index Search System", "VHS Address Search System", or "CTL Pulse" automatic indexing system.
- When recording is performed from the beginning of the tape, the index "mark" will not be detected. To prevent this, play back the tape for approx. 4 — 5 seconds before recording.

VCR FUNCTION SETTING

You can change the VCR mode as required using the on screen display.



1. Turn on the power of both the VCR and TV.
2. Be sure that the TV is set to the video channel (3 or 4).
3. Point the remote control unit at the receiver on the front panel of the VCR.
4. Press the MENU button. The "menu", as illustrated, will appear on the TV screen.

5. Press button "3" to set the VCR function.

- The VCR function set menu will appear. Press buttons "1" through "6" to select the required function.

■ **AUTO DATE MEMO [YES] or [NO]**

Press "1" to change

[YES]: When recording or timer recording is started, the date and channel number will be recorded automatically for 10 seconds.
[NO]: The date and channel will not be recorded.

■ **AUTO PLAY [YES] or [NO]**

Press "2" ➡ to change

[YES]: When a cassette without its safety tab is loaded, the VCR enters the play mode automatically.
[NO]: Play is not done.

■ **AUTO BLUE [YES] or [NO]**

Press "3" ➡ to change

[YES]: The TV screen becomes blue when a channel which is not transmitting a signal is selected.
[NO]: The TV screen does not become blue.

■ **POWER ON [VCR] or [TV]**

Press "4" ➡ to change

[VCR]: The VCR/TV select button is set to "VCR" mode when the VCR power is turned on.
[TV]: The VCR/TV select button is set to "TV" mode.

■ **CATV [YES] or [NO]**

Press "5" ➡ to change

[YES]: Select [YES] if TV and VCR are connected to a cable antenna.
[NO]: Select [NO] if TV and VCR are not connected to a cable antenna.

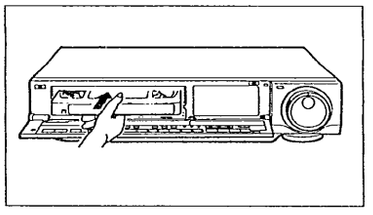
■ **AUTO TIMER REC START [YES] or [NO]**

Press "6" ➡ to change

[YES]: Sounds an alarm when the VCR power is turned on 5 minutes before a timer recording will start. When the VCR is in the stop mode at this time, the VCR power is turned off automatically.
[NO]: The above function does not operate.

TIMER RECORDING

The programmable electronic clock/timer permits the unattended recording of up to 8 preselected programs, including one program on the same day of each week or one program at the same time every day.
It can be preset up to 1 year in advance to record your favorite programs. It turns the unit on and off and changes channels automatically.



1. Insert the Cassette.
2. Set the program timer.
   "START (ON) TIME", "STOP (OFF) TIME", "DAY" etc. See below.
3. Turn power off. Now recording will begin automatically at the start time.

Notes:
- It is not necessary to press RECORD button.
- The "TAPE" flashes to warn that recording will not occur because cassette has not been inserted. If the safety tab on the cassette has been removed, the VCR will automatically eject the cassette when placed in the timer mode.

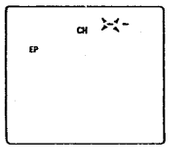
■ **Programming the timer for unattended recording**

For unattended recording the timer needs to know what day to make the recording, **the time to start**, the time to stop, and the channel to be recorded.

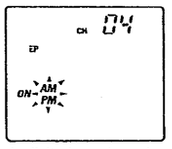
Things to know before starting

- You can correct an error in the program any time before the last step by pressing CORRECT button repeatedly until the digit to be corrected becomes flashing and then enter the correct digit.
- A one minute halt in programming will cause all programmed steps to be erased. Start from the beginning and reprogram.

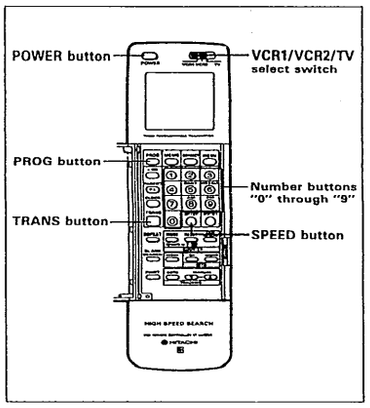
1. Press PROG button once.
   Note: If, when the present time is not being displayed on the remote control unit the PROG button is pressed, programming cannot be done.



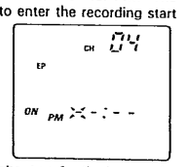
2. Press two digits for the channel to be recorded (for example, "0", "4" for channel 4). The display will prompt you to select either AM or PM.



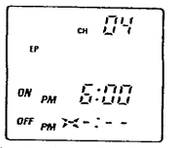
Note: For single-digit channel numbers, first press "0" and then the channel number "1" through "9".



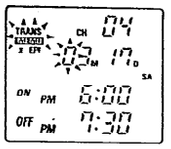
3. Press "8" for AM or "9" for PM. The display will prompt you to enter the recording start time.



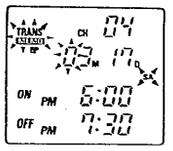
4. Press four digits, two for the hour and two more for a minute (for example, "0", "6", "0", "0" for 6:00). The display will prompt you to select the recording stop time.



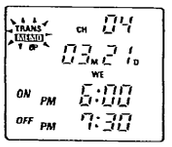
5. Press four digits, two for the hour and two more for the minute (for example, "0", "7", "3", "0" for 7:30).
   The display will show "START DAY" followed by the current date.



6. Press SPEED button to select SP, EP or AUTO modes. Selecting AUTO enables automatic recording. See "Note"

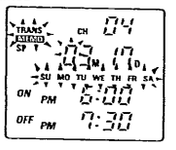


7. If you want to start recording on a future date, press four digits (two for the month and two for the day) (for example "0", "3", "2", "1" for begin recording on March 21). The day of the week is displayed automatically.
   Note: If you want recording to start on the current day, skip step 7.

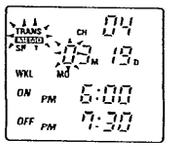


8. Aim the remote control unit at the receiver on the front panel of the VCR and press the TRANS button.
   Note: If the TV is turned on, the programmed information will be displayed on the TV screen for several seconds.
9. Turn off the power of the VCR.
   Now the VCR will begin recording at the time you selected.

- **To record at the same time every day**
  Press button "5" (DAILY) after setting the stop time in step 5. Every time the button is pressed, "MO ~ FR", "MO ~ SA" or "SU ~ SA" will be displayed. Select one of these periods and then set the start date. The figure below shows that "SU ~ SA" has been programmed.



- **To record on a specified day at the same time each week**
  After setting the stop time in step 5, press button "6" (WEEKLY) repeatedly to set the day of the week and then program the start date. The figure below shows that Monday in each week has been selected.



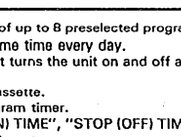
Notes:

1. The information in the display of the remote control unit goes off automatically after approx. one minute.
2. When the TRANS button is pressed in step 8, the "Err" indicator appears in the VCR display in the following cases.
   - When you select a channel that is not displayed even if the CHANNAL select button is pressed.
   - When the TRANS button is pressed with the remote control unit incorrectly pointing at the remote control receiver of the VCR.

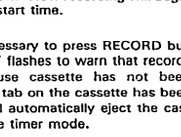
   Input information correctly again in the above cases.
3. When all program numbers 1 to 8 are programmed, "FULL" is displayed and programming is not performed even when the program information is transmitted to the VCR.
4. If you select the "AUTO" mode using the SPEED button, the "AUTO" mode automatically determines how much tape is left and switches speed accordingly. The "AUTO" mode starts recording at SP speed, but if it finds out there is not enough tape left to complete the programmed recording, it switches over to EP speed.
   - There will be some distortion in picture and sound at the point where speed is switched.
5. If one programmed event does not finish before another programmed event starts, the VCR finishes recording the first event and then begins recording the other event that is already in progress.
6. To stop the VCR during timer recording, press POWER button and then STOP button within 10 seconds.
7. If a power failure of more than 30 minutes occurs, "—:—" appears in the display and the time and programs will be erased. Now set the clock and program the timer.
8. If you select the "AUTO TIMER REC START [YES]" on page 33, an alarm sounds when the VCR power is still on 5 minutes before a timer recording will start. If the VCR is in the stop mode at this time, the VCR power is turned off automatically.

RECALLING THE PROGRAM

1. Turn on the power of both VCR and TV.
2. Be sure that the TV is set to the video channel (channel 3 or 4).
3. Aim the remote control unit at the receiver on the front panel of the VCR.
4. Press MENU button on the remote control unit.



5. Press "1" button.
   The TV screen displays the information you entered the program for 1 minute.

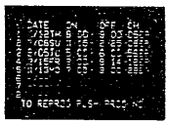


6. Press MENU button to return to TV screen.

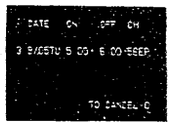
CLEARING (ERASING) INFORMATION FROM A PROGRAM

1. Follow steps 1 through 5 of "Recalling the Program"

   The programmed information appears on TV screen.



2. Press the button (1 through 8) of the program you want to clear.



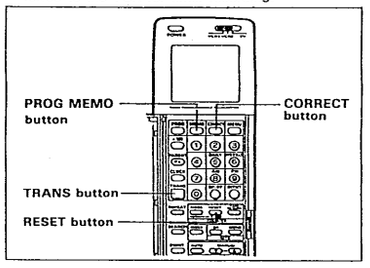
3. Press button "0".

   That erases the program. To clear another program, repeat steps 2 and 3.
4. When finished, press MENU button.

Note: Normal program is cleared automatically when the timer recording is finished, but daily and weekly programs remain in the timer even after the timer recording is finished.

PROGRAM MEMO

- The VCR stores events programmed and sent to it from the remote control, but the remote control can also store up to eight programmed events (using program memo).
- Dates are automatically updated unless the program is erased. (See below.)
- Programs stored in program memo can be transferred to the VCR for timer recording.



To store a program

When [MEMO] flashes on and off during the programming of a timer recording, press the MEMO button.

- The program is stored in the remote control.

To transfer the program stored in PROGRAM MEMO to the VCR

1. Press MEMO button.
   - Press the button until the program you want to make timer recording is displayed.
2. Press TRANS button.
   - Point remote control at VCR and press TRANS button.
   - Don't forget to turn VCR power off. Otherwise, the timer recording will not start.

During event storage

If eight events are already in storage, [MEMO] will not flash on and off during the programming of a timer recording. When MEMO button is pressed, the "FUL" is displayed to show that storage is full.

To clear storage

Press MEMO button to display the contents stored, then press RESET button.

When programmed recording time ends

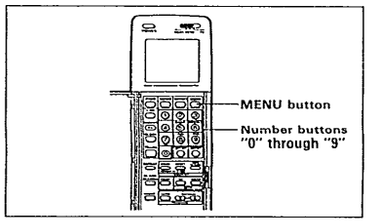
Dates in the [MEMO] are automatically advanced. For example, after an event programmed to be recorded on one day is over, the VCR automatically updates that event for recording at the same time the following week.

Checking and reprogramming

Every press of MEMO button shows the contents of storage on the remote control are displayed. To reprogram storage contents, press CORRECT button and revise.

OFF TIMER

OFF TIMER permits to turn off the VCR power automatically. Setting OFF TIMER to a time no more than 99 minutes from now automatically cuts power when that time arrives.



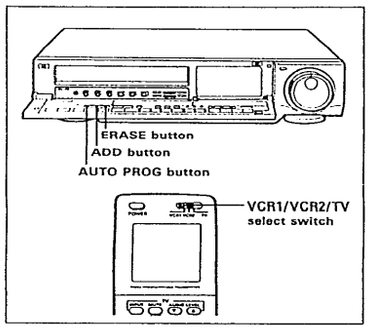
1. Press MENU button.
   The menu shown appears on the TV screen.

2. Press "2" button.
   OFF TIMER appears on the TV screen.

3. Set OFF TIMER by pressing buttons "0" through "9".
   To turn VCR power off in 50 minutes, for example, first press "5", then press "0".

4. Press MENU button.
   SLEEP appears on the VCR's display and 50 minutes later power goes off.

VCR1/VCR2/TV SELECT SWITCH



If the operation buttons on the remote control unit are pressed in this case, the two VCRs must operate in different ways. Therefore it must be possible to discriminate between VCR1 and VCR2. Set the VCR1/VCR2/TV select switch to "VCR1" to operate the other VCR and set it to "VCR2" to operate this VCR. Since this VCR has been set to "VCR1" for receiving a signal from the remote control when shipped from the factory, set the VCR to "VCR2"by the following procedure.

1. Turn the VCR power off and press the AUTO PROG button.
   "VCR-1" will appear in the display.
2. Press the ERASE button. The display will switch to "VCR-2".

Now, this VCR can receive signals from the remote control unit when the VCR1/VCR2/TV select switch is set to "VCR2".

To operate this VCR, set the VCR1/VCR2/TV select switch to "VCR2" and to operate the other VCR, set it to "VCR1".

- To return this VCR so that it can receive signals from the remote control unit with the VCR1/VCR2/TV select switch set to "VCR1".
  1. Turn the VCR power off and press the AUTO PROG button.
  2. Press the ADD button. "VCR-1" will appear in the display. Now, this VCR has been returned to "VCR1".

Note: This remote control unit can operate most but not all Hitachi VCRs (cannot operate the VT-9700A, 9710A, 15A and 6800A). When Hitachi VCRs other than this are controlled by the remote control unit, timer programming cannot be done using this remote control.

DISASSEMBLY

1. NAMES AND LOCATIONS OF CIRCUIT BOARDS

Fig. 1-1 Top View

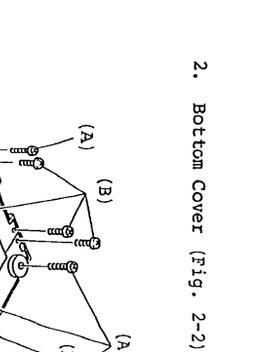


Fig. 1-2 Bottom View

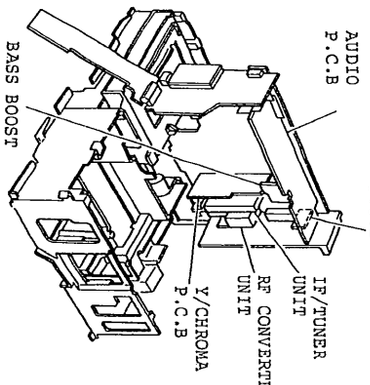


Fig. 1-3 State with the SSJ P.C.B Opened

(Procedure when removing)
Remove the components in the order of letters (A, B, C ...) in the illustrations.

(Procedure when reinstalling)
Reinstall the components by the reverse procedure to removal when not otherwise specified.

2. CASE REMOVAL

1. Top Cover (Fig. 2-1)

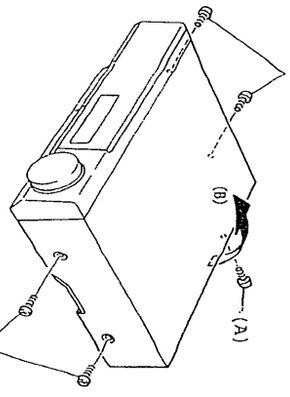


Fig. 2-1

2. Bottom Cover (Fig. 2-2)

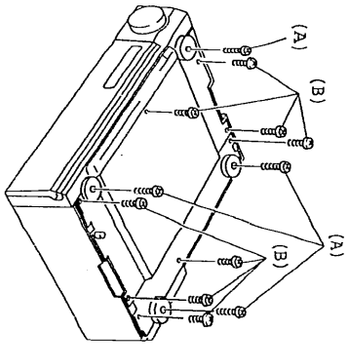
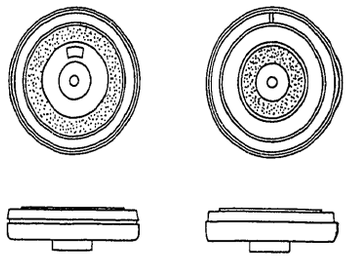


Fig. 2-2

(Caution during work)
Turn the insulators counterclockwise to remove them.

(Caution when reinstalling)
Be careful of the front and rear locations of the insulators. (See the figure below)

Turn the insulators clockwise until they strike the bottom cover and then fix them with screws.



- Front Insulator - - Rear Insulator -

3. Front Panel (Fig. 2-3)

Components to remove previously	Item
Top Cover	2-1
Bottom Cover	2-2

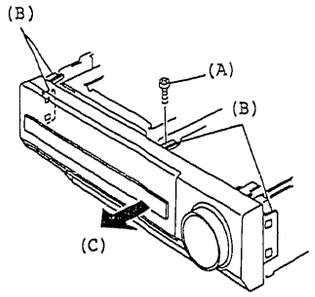


Fig. 2-3

(Caution during work)
The circuit board in the front panel and the circuit boards in the chassis are connected via connectors. Therefore, remove the front panel by pulling it at the right angles to the chassis.

(Caution when reinstalling)
Reinstall the front panel at the right angles to the chassis while taking care of the connectors (which connect the circuit boards).

4. Front Door (Fig. 2-4)

Components to remove previously	Item
Front Panel	2-3

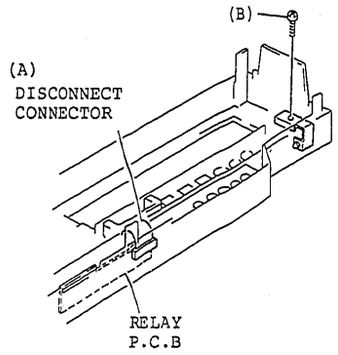


Fig. 2-4(a)

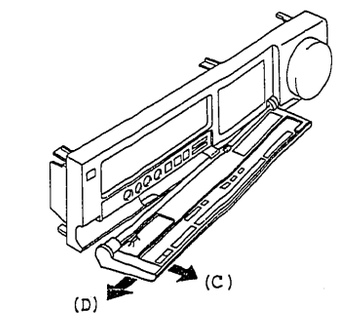


Fig. 2-4(b)

(Caution during work)
Be careful so as not to damage the front panel.

(Caution when reinstalling)
Pass the flexible connector through the hole in the bottom at the middle of the front panel (under the recording level control).

- Front Metal Panel Removal - (Fig. 2-5)

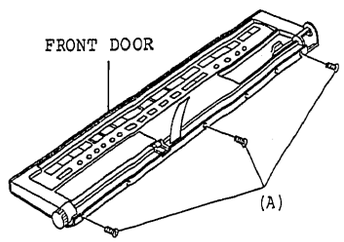


Fig. 2-5

- Front Door Damper/Door Switcher - (Fig. 2-6)

(Caution when reinstalling)
Reinstall the front door damper while placing the front door in the horizontal position.

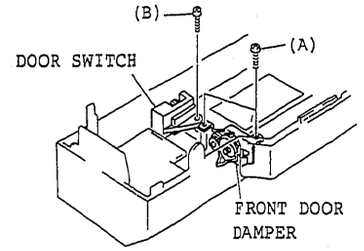


Fig. 2-6

5. Front Jack Cover (Fig. 2-7)

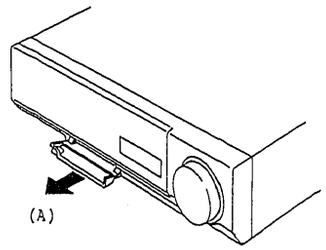
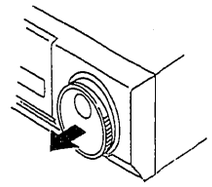


Fig. 2-7

6. Jog/Shuttle Dial (Fig. 2-8)



Hold the shuttle dial and pull it out to the front.

Fig. 2-8

Be sure to remove cases when servicing and checking the circuit boards. Top Cover (see item 2-1) Bottom Cover (see item 2-2) Front Panel (see item 2-3)

3. CIRCUIT BOARD REMOVAL

1. Jog Dial Circuit Board (Fig. 3-1)

(Before removing)
Remove the jog/shuttle dial previously. (See item 2-6)

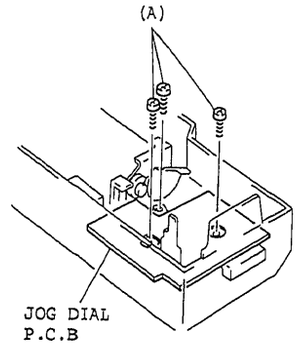


Fig. 3-1

2. Relay Circuit Board (Fig. 3-2)

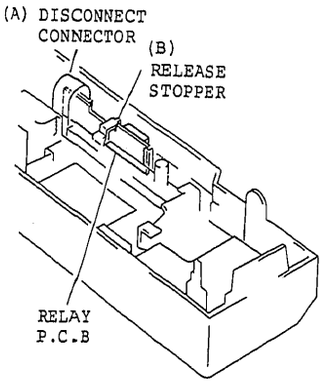


Fig. 3-2

3. Front Switch Circuit Board (Fig. 3-3)

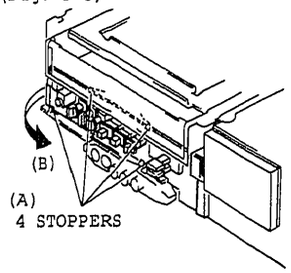


Fig. 3-3

4. Timer Circuit Board (Fig. 3-4)

(Before removing)
Open the front switch circuit board.
(See item 3)

Release the tabs of the display holder from the circuit board.

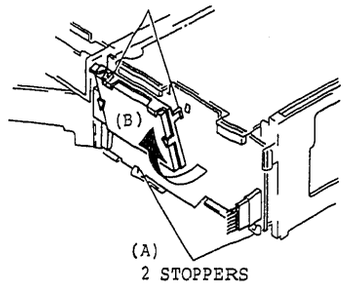


Fig. 3-4

(How to disconnect connectors between circuit boards)
Connectors between front switch and timer circuit boards

1) Open the front switch and timer circuit boards.
2) Set both circuit boards in the horizontal positions and pull out the front switch circuit board in the direction of arrow (A).

Connectors between timer and SSJ circuit boards

1) Open the timer circuit board to set it in the horizontal position.
2) Set the SSJ circuit boards in the horizontal position and pull out the timer circuit board in the direction of arrow (B).

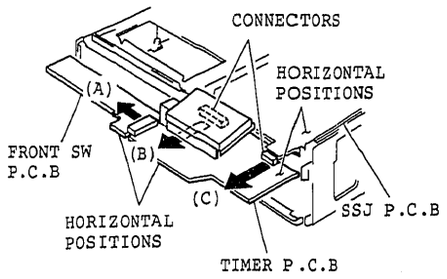


Fig. 3-5 Disconnecting the Connectors

5. SSJ Circuit Board (Fig. 3-6)

(Before removing)
1) Open the front switch circuit board. (See item 3-3)
2) Open the timer circuit board. (See item 3-4)

(Caution)
After removing the SSJ circuit board, set it to the service position shown on page 3-1.

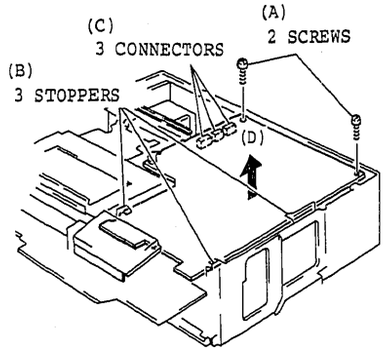


Fig. 3-6

(Rear Panel Removal)
While lifting the SSJ circuit board, remove one (1) screw on the rear panel an three (3) nylon rivets on the circuit board, and pull out the rear panel backwards.

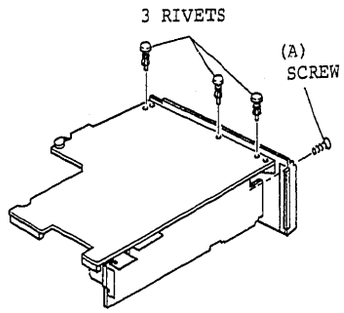


Fig. 3-7 Rear Panel Removal

6. Y/Chroma and Audio Circuit Boards (Fig. 3-8)

(Before removing)
1) Remove the SSJ circuit board. (See item 3-5)
2) Remove the rear panel. (See item 3-5)

(Caution during work)
1) Unsoder the connectors from the solder side of the SSJ circuit board and then remove the circuit board.

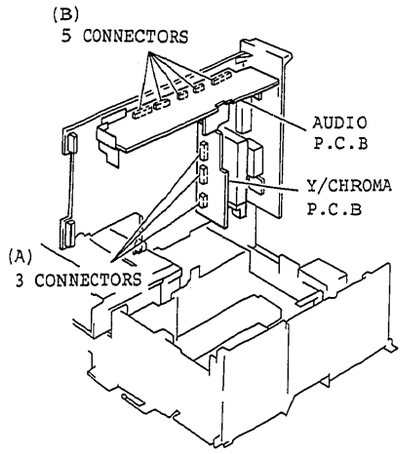


Fig. 3-8

7. Power Transformer and Regulator Circuit Boards (Fig. 3-9)

(Before removing)
1) Remove the rear piece previously.

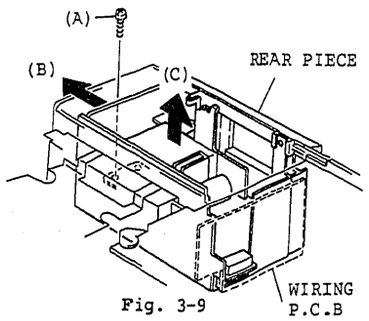


Fig. 3-9

8. Pre/Rec Amp Circuit Board (Fig. 3-10)

(Before removing)
1) Remove the shield cover on the front of the cylinder previously.

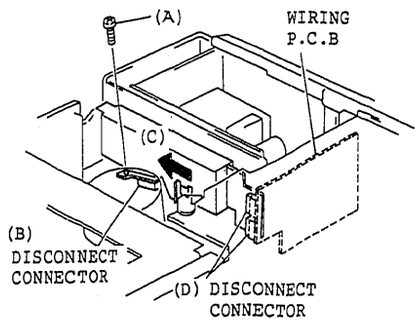


Fig. 3-10

9. Wiring circuit Board (Fig. 3-11)

Components to remove previously	Item
SSJ P.C.B	3-5
Power Transformer and Regulator P.C.Bs	3-7
PRE/REC AMP P.C.B	3-8

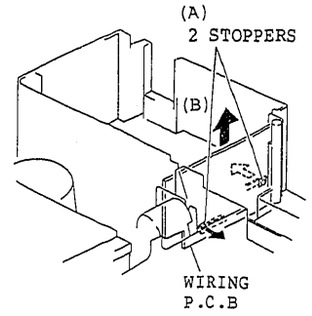


Fig. 3-11

10. Front Jack Circuit Board (Fig. 3-12)

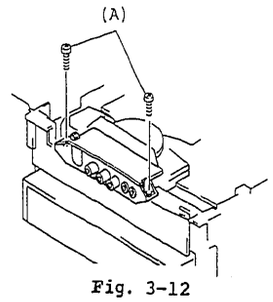


Fig. 3-12

11. Sensor/Motor Drive Circuit Board (Fig. 3-13)

(Before removing)
1) Remove the front jack circuit board. (See item 3-10)
2) Remove the take-up pulley. (See item 7-14)

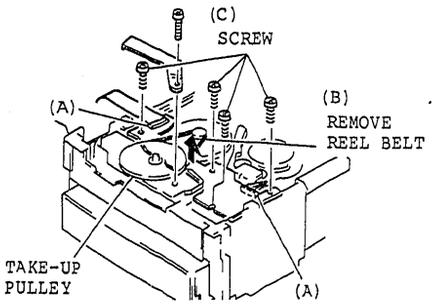
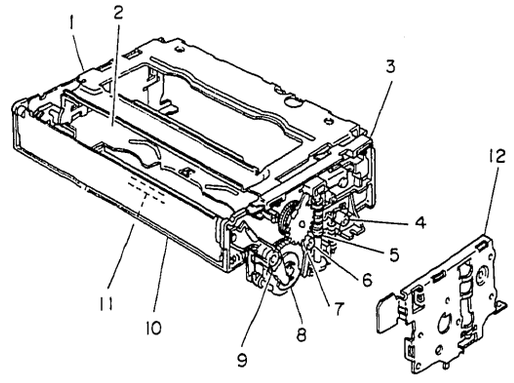


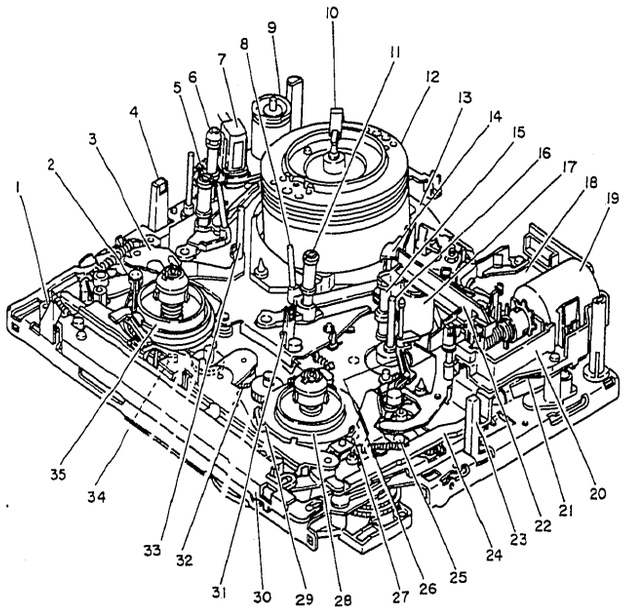
Fig. 3-13

4. IDENTIFICATIONS AND LOCATIONS OF MAIN MECHANICAL COMPONENTS



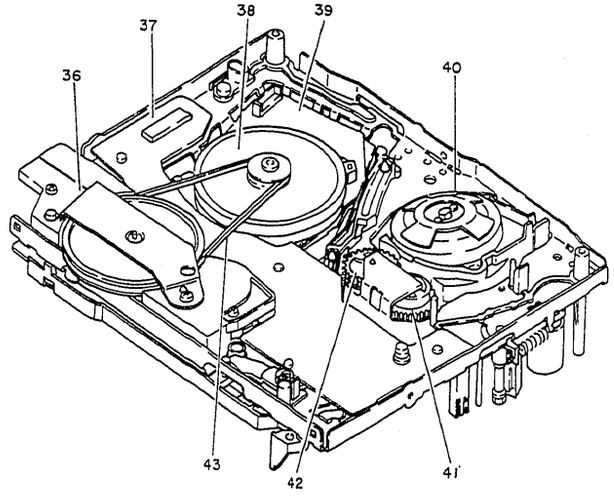
1. Chassis Holder
2. Cassette Holder
3. Gear Bracket
4. Switch Lever (B)
5. FL Worm Gear
6. Switch Lever (A)
7. Worm Wheel
8. Drive Gear
9. Door Arm
10. Front Holder
11. Shaft Pin
12. Side Chassis

Fig. 4-1 Cassette Loading Mechanism



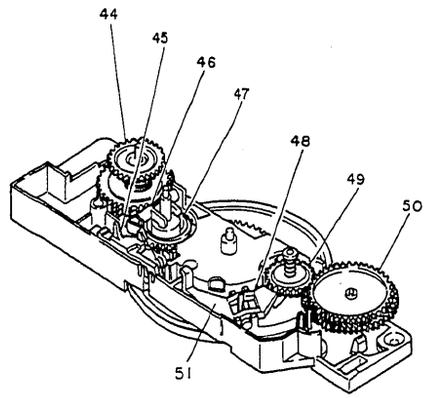
1. Safety Arm
2. Tension Band
3. Tension Arm
4. Supply End Sensor
5. Supply Guide Roller
6. Supply Guide Pole
7. Full Erase (FE) Head
8. Inclined Guides
9. Impedance Roller
10. Ground Brush
11. Take-up Guide Roller
12. Cylinder (Video Heads)
13. Cylinder Motor Base
14. Audio/Control (A/C) Head
15. Take-up Guide Pole
16. Capstan Shaft
17. Pressure Roller
18. Mechanism State Switch
19. Loading Motor
20. Loading Motor Holder
21. Load Bracket Assembly
22. Cassette Lid Opener
23. Take-up End Sensor

Fig. 4-2 Top View of Mechanism



24. Brake Link Arm
25. Pressure Roller Operation Arm
26. Draw Pin
27. Take-up Brake
28. Take-up Reel Disk
29. Take-up Main Brake
30. Slider Block
31. End Lamp
32. Reel Drive Idler
33. Tension Pole
34. Supply Main Brake
35. Supply Reel Disk
36. Clutch Gear Assembly
37. Sensor/ Motor Drive P.C.B
38. Capstan Motor
39. Capstan Motor P.C.B
40. Cylinder Motor
41. Supply Loading Gear
42. Take-up Loading Gear
43. Reel Belt

Fig. 4-3 Bottom View of Mechanism



44. Take-up Gear
45. Clutch Arm
46. Change Arm
47. Change Gear
48. Take-up Pulley
49. FL Change Gear
50. Relay Gear
51. FL Change Arm

Fig. 4-4 Clutch Gear Assembly

Be sure to remove cases, etc. before servicing the mechanism and replacing components, otherwise, the cases, etc. could be damaged.

(Procedure of disassembly)
Remove the parts in the order of letters shown in the illustrations.
(Procedure of reinstallation)
Reinstall the parts by the reverse procedure to removal when no special cautions are given.

5. CASSETTE LOADING MECHANISM REMOVAL

1. Cassette Loading Mechanism (Fig. 5-1)

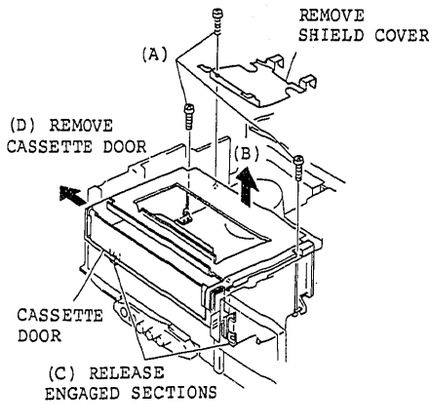


Fig. 5-1

2. Loading Gear Assembly, Chassis Holder, Cassette Holder Assembly and Front Holder

Loading Gear Assembly (A in Fig. 5-2)
Chassis Holder (B in Fig. 5-2)
Cassette Holder Assembly (C in Fig. 5-2)
Front Holder (D in Fig. 5-2)

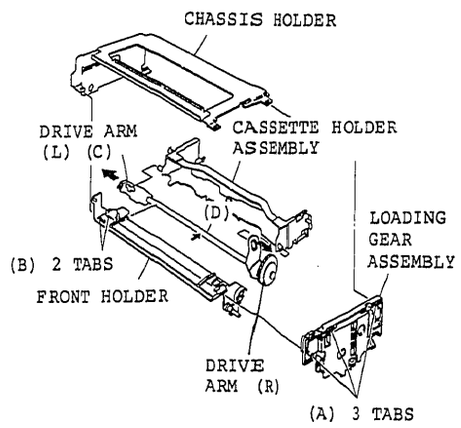
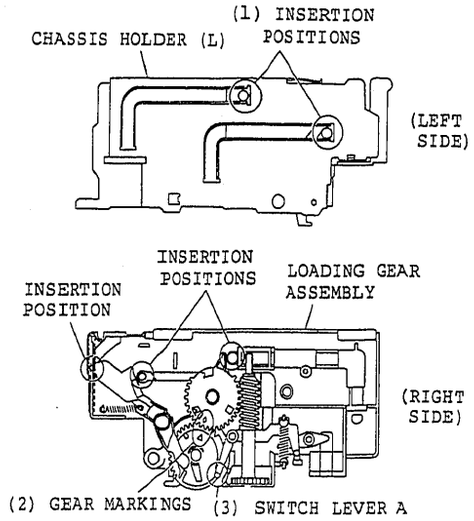


Fig. 5-2

(Cautions when reinstalling)
1) Check the insertions of 4 bosses.
2) Check the alignment markings.
3) Check the position of cassette switch lever (A).



3. Cassette Holder Base and Cassette Holders (L/R)

Cassette Holder Base (A in Fig. 5-3)
Cassette Holders (L/R) (B in Fig. 5-3)

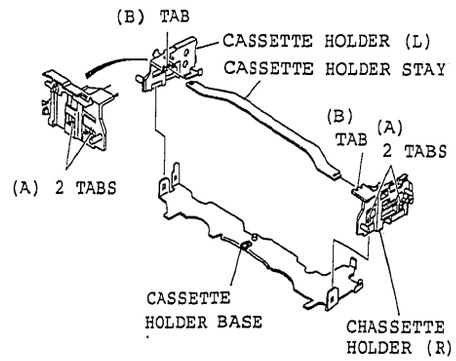


Fig. 5-3

6. LOADING GEAR REMOVAL

1. Gear Bracket, FL Worm Gear, Door Arm, Worm Wheel and Switch Levers A/B

Gear Bracket (A in Fig. 6-1)
FL Worm Gear (B in Fig. 6-1)
Door Arm (C in Fig. 6-1)
Worm Wheel (D in Fig. 6-1)
Switch Levers A/B (E and F in Fig. 6-1)

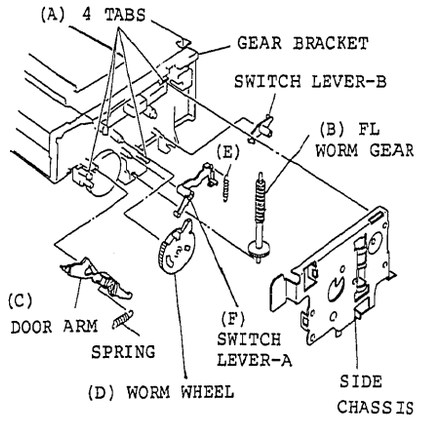


Fig. 6-1

7. MAIN MECHANICAL COMPONENTS REMOVAL

1. Impedance Roller/FE (Full Erase) Head and A/C (Audio/Control) Head

Impedance Roller/FE (Full Erase) Head (A - E in Fig. 7-1)
A/C (Audio/Control) Head (F - G in Fig. 7-1)

(Cautions when reinstalling)
1) Hook the bottom of the spring under the head base to the chassis and the top to the stopper of the head base.

(Adjustments after reinstalling)
1) A/C (Audio/Control) Head Adjustment (page 4-6)
2) X-Value Adjustment (page 4-8)
3) Audio Playback Level Adjustment (page 3-12)
4) Audio Bias Level Adjustment (page 3-14)

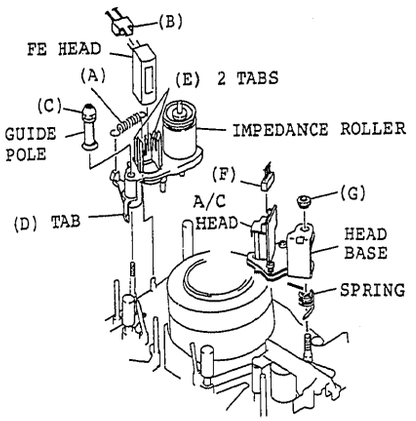


Fig. 7-1

2. Upper Cylinder (Video Heads) (Fig. 7-2)

(Cautions during work)
1) Remove the pre/rec amp circuit board first.
2) Pull out the upper cylinder vertically to the cylinder attachment direction.
3) Do not touch video head tips.

(Cautions when reinstalling)
1) Insert the upper cylinder so its blue marking is aligned with the arrow on the rotary transformer.
2) Tighten the two upper cylinder retaining screws alternately.

(Adjustment after reinstalling)
1) Adjustment after replacing the cylinder (video heads) (page 4-9)

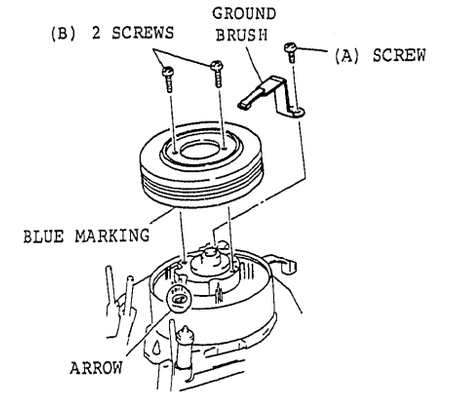


Fig. 7-2

3. Cylinder Motor Assembly (Fig. 7-3)

(Cautions during work)
1) Remove the pre/rec amp circuit board first.
2) Place the side of the unit down for working.
3) Do not touch video head tips.

(Adjustment after reinstalling)
1) Adjustment after replacing the cylinder (video heads) (page 4-9)

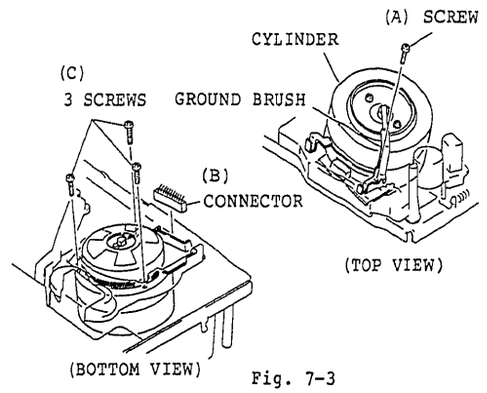


Fig. 7-3

4. Capstan Motor Assembly (Fig. 7-4)

(Caution when reinstalling)
1) Keep the capstan shaft clean.

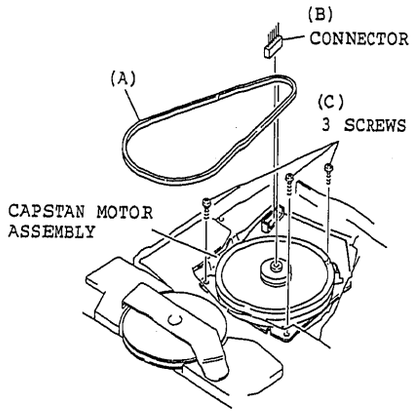


Fig. 7-4

5. Loading Motor/Mechanism State Switch Assembly (Fig. 7-5)

(Caution during work)
1) Release the 2 bosses of the motor holder from the screw holes in the motor when releasing tab (D).

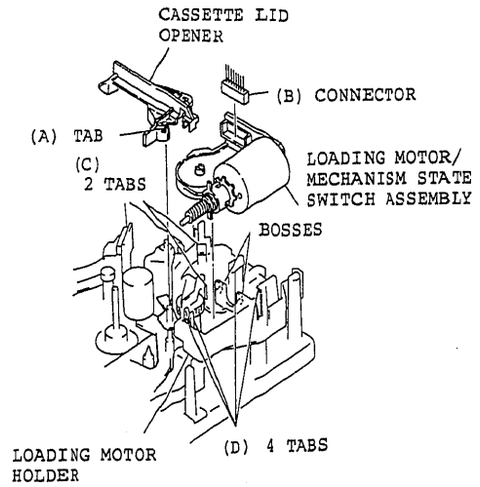


Fig. 7-5

6. Tension Arm/Tension Band (Fig. 7-6)

(Caution during work)
1) Move the supply subbrake in the direction of arrow (D) when removing the tension band.

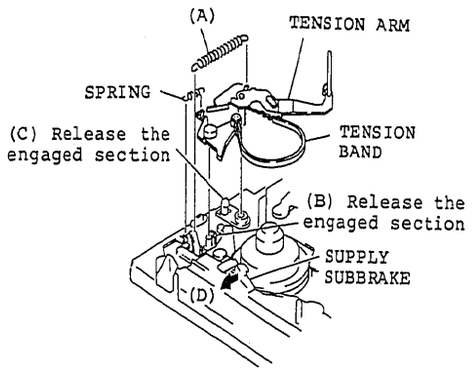


Fig. 7-6

7. Slider Block and Reel Drive Idler (Fig. 7-7)

Slider Block (A in fig. 7-7)

(Caution when reinstalling)
1) Push the supply subbrake, supply main brake and take-up main brake in the direction of arrows (C) when reinstalling them.
2) Check that 2 bosses of the load bracket assembly are inserted. Check that the boss of slider M does not ride on the tension operation arm or ride over it.

Reel Drive Idler (B in Fig. 7-7)

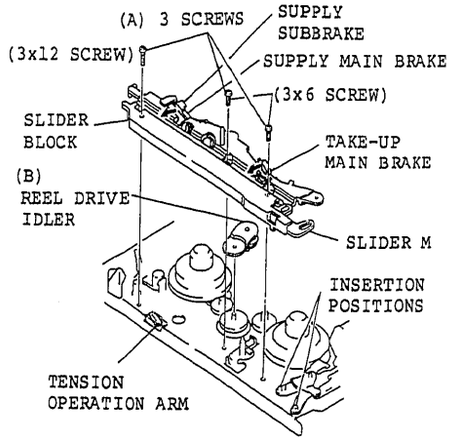


Fig. 7-7

8. Supply/Take-up Reel Disks

Components to remove previously	Item
Slider Block	7-7
Tension Arm/Tension Band	7-6

Supply/Take-up Reel Disks (Fig. 7-8)

(Caution during work)
1) Move the take-up brake in the direction of the arrow when removing the take-up reel disk.

(Caution when reinstalling)
1) Be sure to install a washer on the installation shaft.

(Adjustments after installing)
1) Tension Pole Position and Tension Adjustments
2) Reel Disk Height Adjustment (page 4-3)

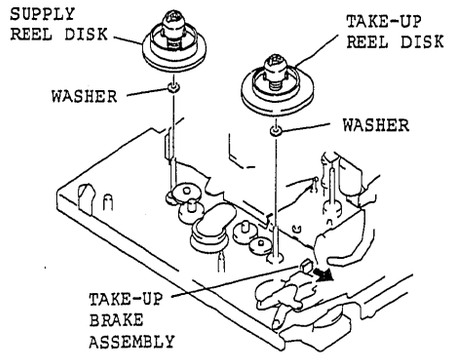


Fig. 7-8

9. Pressure Roller Assembly, Supply/Take-up Guide Poles and Suply/Take-up Guide Rollers

Pressure Roller Assembly (A and B in Fig. 7-9)

(Cautions when reinstalling)
1) Insert the pin of the pressure roller into the hole in the pressure roller operation arm.
2) Keep the surface of the pressure roller which is in contact with the tape clean.

Supply/Take-up Guide Poles (C in Fig. 7-9)

(Caution when reinstalling)
1) Keep the surface of the guide pole which is in contact with the tape clean.

(Adjustment after reinstalling)
1) Guide Pole Height Adjustment (page 4-4)

Supply/Take-up Guide Rollers (D and E in Fig. 7-9)

(Adjustment after reinstalling)
1) Guide Roller Height Adjustment (page 4-5)

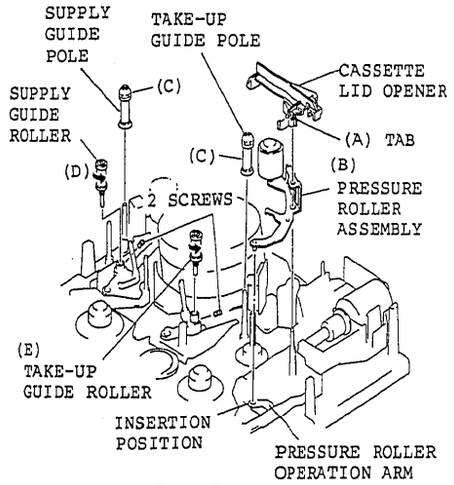


Fig. 7-9

10. Loading Motor Block, Brake Change Arm, Brake Link Arm and FS Brake Arm

Loading Motor Block (A - D in Fig. 7-10)

(Caution during work)
1) Remove the loading motor block while holding the section indicated by arrow (E) so the load bracket assembly does not lift.

(Adjustment after reinstalling)
1) Mechanism Sate Switch Adjustment (page 4-2)

Brake Change Arm (F in Fig. 7-10)

(Caution when reinstalling)
1) Check that the boss is inserted into the hole in the brake link arm.

Brake Link Arm (G and H in Fig. 7-10)

Components to remove previously	Item
Slider Block	7-7
Take-up Reel Disk	7-8

(Cautions when reinstalling)
1) Check that the boss of the brake lift arm is inserted securely.
2) Check that the boss of the brake change arm is inserted securely.

FS Brake Arm (H and I in Fig. 7-10)

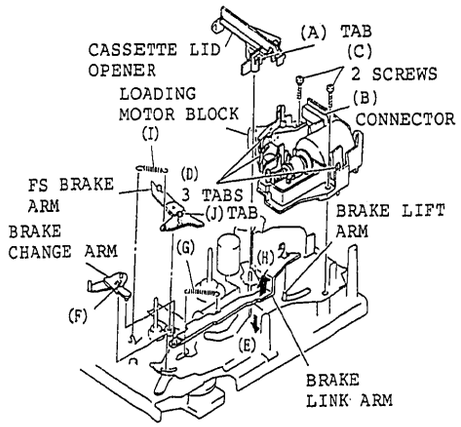


Fig. 7-10

11. Load Bracket Assembly, Take-up Brake Assembly and Draw Pin

Components to remove previously	Item
Slider Block	7-7
Take-up Reel Disk	7-8
Pressure Roller Assembly	7-9
Loading Motor Block	7-10
Brake Link Arm	7-10

Load Bracket Assembly (A and B in Fig. 7-11)

(Caution during work)
1) Release the boss of the loading slide gear from the hole in the lift arm when lifting the bracket assembly.

Take-up Brake Assembly (C in Fig. 7-11)

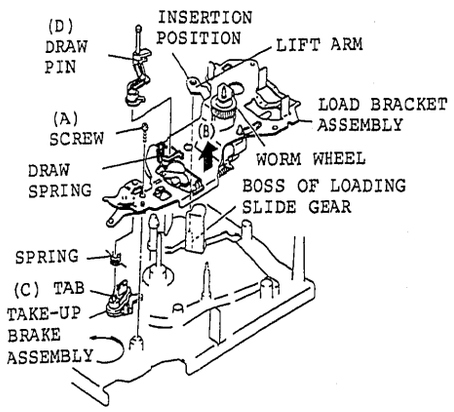


Fig. 7-11

Components to remove previously	Item
Brake Operation Arm	7-12

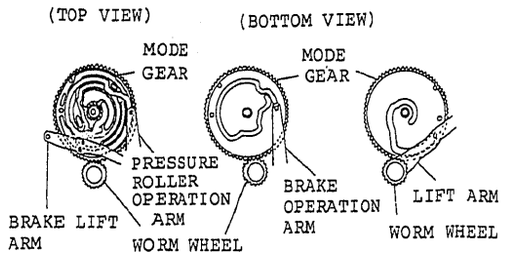
(Caution when reinstalling)
1) Check that the spring is hooked securely.

12. Brake Operation Arm, Mode Gear, Worm Wheel, Pressure Roller Operation Arm, Mode Change Arm and Brake Lift Arm

(Before performing the work)
Remove the load bracket assembly. (See item 7-11)

Brake Operation Arm (A in Fig. 7-12)
Mode Gear (B and C in Fig. 7-12)
Worm Wheel (D in Fig. 7-12)
Pressure Roller Operation Arm and Mode Change Arm (E - G in Fig. 7-12)
Brake Lift Arm (H in Fig. 7-12)

(Caution when reinstalling)
1) Check that the bosses of each gear are inserted into the specified grooves in the mode gear.



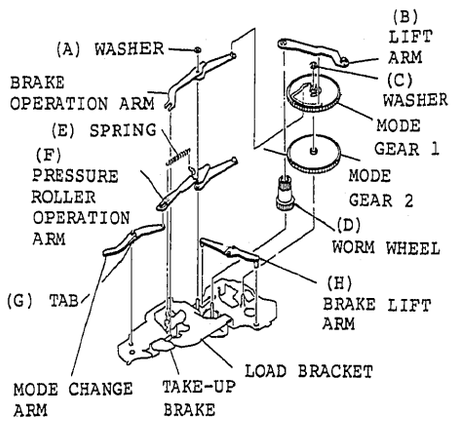


Fig. 7-12

13. Cylinder Motor Base and Supply/Take-up Loading Arms

Components to remove previously	Item
Cassette Loading Mechanism	5-1
Cylinder Motor Assembly	7-3

Cylinder Motor Base (A in Fig. 7-13)
Supply/Take-up Loading Arms (B - D in fig. 7-13)

(Caution during work)
1) Release tab (D) when removing the take-up loading arm.

(Caution when reinstalling)
1) Align the markings on each gear.

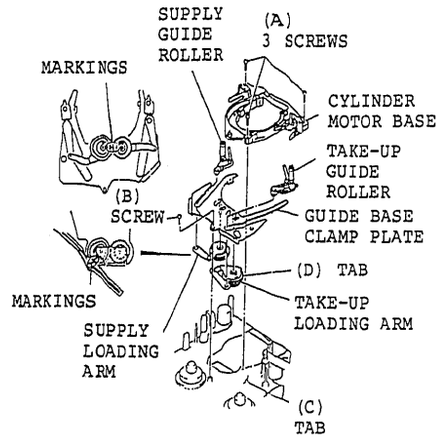


Fig. 7-13

14. Take-up Pulley and Clutch Gear Assembly

Components to remove previously	Item
Slider Block	7-7
Reel Drive Idler	7-7

Take-up Pulley (A and B in Fig. 7-14)
Clutch Gear Assembly (C in Fig. 7-14)

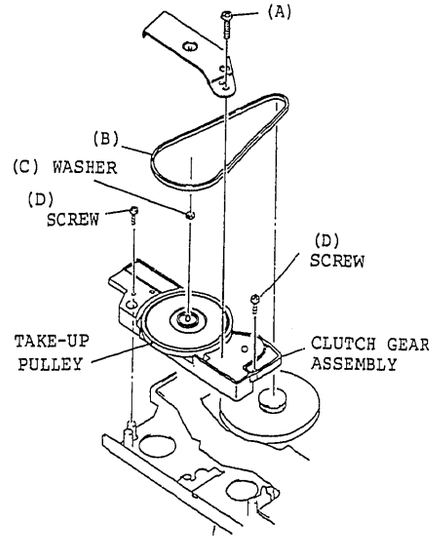


Fig. 7-14

15. Take-up Gear, Change Arm, Change Gear, Relay Gear, FL Change Gear and FL Change Arm (Fig. 7-15)

(Befor performing the work)
The components shown here are the gears and arms located inside the clutch gear assembly. As these components are not supplied, use the figure as a reference for reinstallation.

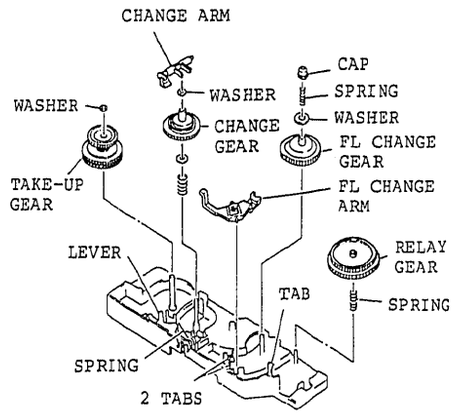


Fig. 7-15

CHAPTER 3

ELECTRIC CIRCUIT ADJUSTMENT

Test equipment and tapes necessary for adjustment

1) Dual-trace oscilloscope
2) Color bar generator
3) VTVM
4) DC voltmeter
5) Frequency counter
6) Monitor TV (with A/V jacks)
7) Alignment tapes
   - o MH-1 : Parts No. 7099046
   - o 30HMP2-1: Parts No. 7099089
   - o 24HMASF-2: Parts No. 7099153 (Hi-Fi alignment tape)
8) Blank tape
9) C/R oscillator
10) Vectorscope

Cautions on adjustments

1) If there are no special instructions, the following conditions apply.
   - o Oscilloscope probe: 10:1
   - o Oscilloscope synchronization: Internal sync
   - o Ground of test equipment: TP602 (GND) on SSJ P.C.B
2) When making more than one adjustment, perform the adjustments in the order listed.

Servicing positions

The circuit boards can be set to the servicing positions as follows when servicing and adjusting the unit.

1) Remove the side panels, top and bottom covers and the front panel. (See the items in the section on case removal in chapter 2.)
2) Open the Front Switch and Timer circuit boards and lift up the entire SSJ (Servo/System Control/ Jack) circuit board. (See the items in the section on circuit board removal in chapter 2.)
3) Move the circuit board holder at the center left of the SSJ (Servo/System Control/Jack) circuit board in the direction of arrow (A). (Fig. 1)

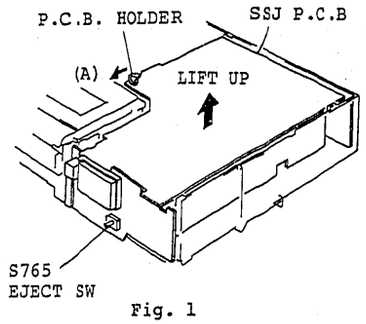


Fig. 1

4) Set the SSJ (Servo/System Control/Jack) circuit board to the vertical position and connect it to the Wiring circuit board via connectors. (Fig. 2)
5) Set the circuit board holder to the cassette loading mechanism section. (Fig. 2)
6) Turn the stay of the rear panel section and insert it into the pin of the AC panel section. Hold the stay by the tab of the AC panel section. (Fig. 3)

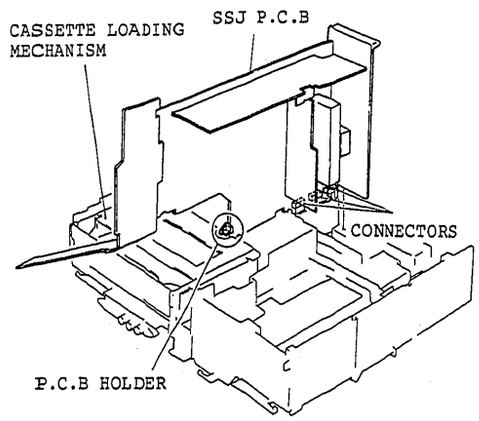


Fig. 2

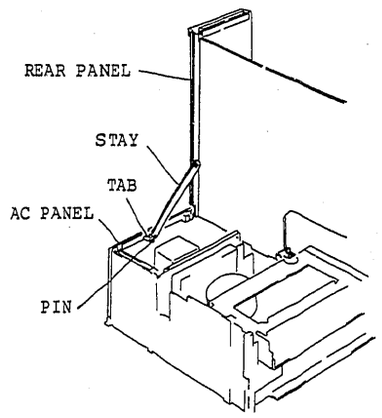


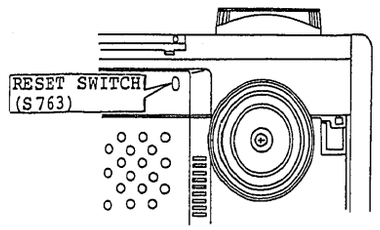
Fig. 3

(Caution)
When the VTR is set to the servicing position, it is not possible to operate the VTR from the switches on the front panel. Use the remote control to operate the VTR.
Press S765 (EJECT) on the FIT (Timer) circuit board to remove the cassette.

Usable servicing methods

1. To reset the timer microprocessor

The timer microprocessor is not reset when the power cord is unplugged from the AC outlet as its power is backed up by the backup circuit. Press switch S763 on the FIT (Timer) circuit board to reset the timer microprocessor.



- Bottom of VTR -

2. To release the blue background function

1) Press the MENU button on the remote control to display the guide menu on the monitor screen.
2) Select "3" to obtain the "VTR mode" picture.
3) Press button "3" on the remote control to set the AUTO BLUE section to "NO".

3. To set the VTR to the test mode

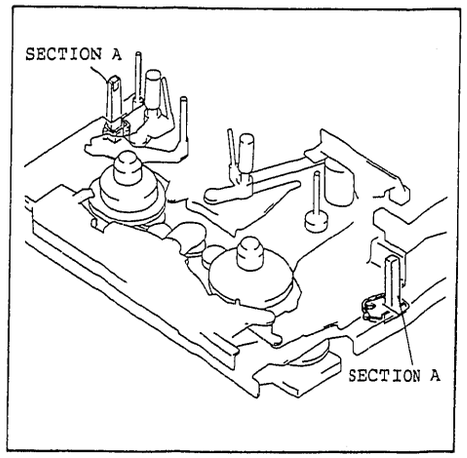
Connect TP601 to TP603 on the SSJ circuit board to set the servo circuit to the EP playback mode (test mode.)

4. To set the VTR to the loading state without loading a cassette

1) Remove the top cover and front panel.
2) Remove the cassette loading mechanism.
3) Unplug the power cord from the AC outlet.
4) Cover the supply and take-up end sensors with black masking tape, etc. to shut off the light.
5) Plug the power cord into an AC outlet.
6) Turn the VTR on.
   The VTR can accept the inputs of each mode in this state. However, the rewind operation cannot be performed for more than a few seconds because the take-up reel disk is in the stop state and reel pulses cannot be detected.

(Cautions)
Always return the VTR to the original state in the following order after the above operations have been completed.

1) Remove the masking tape, etc. from the supply and take-up end sensors.
2) Unplug the power cord from the AC outlet once to reset the system control microprocessor.



Adjustment Parts Location

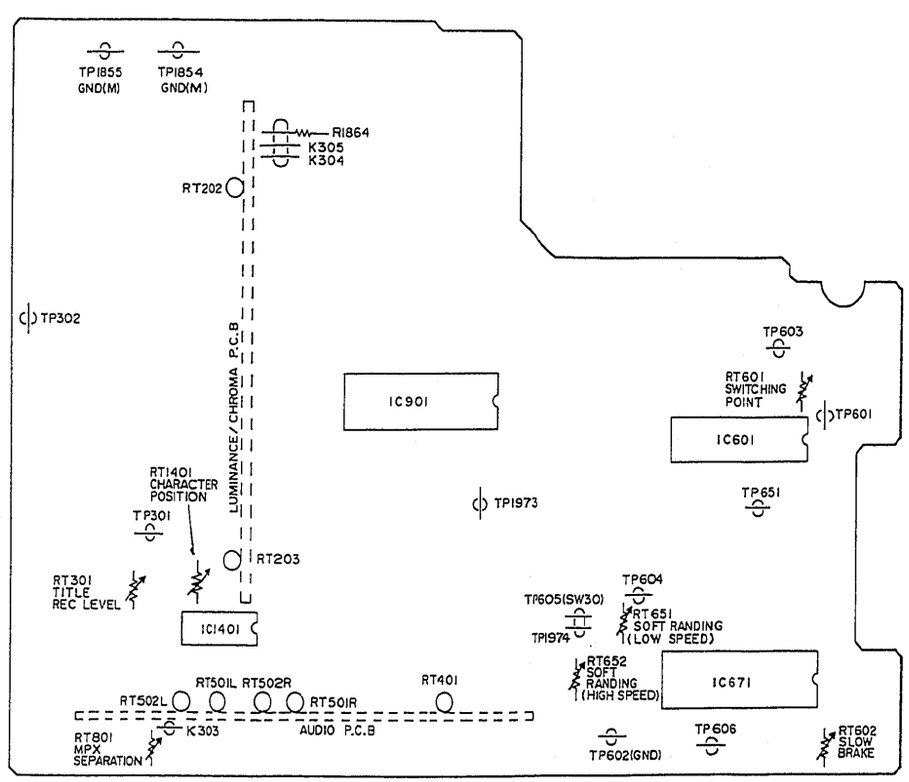


Fig. 1 SSJ Circuit Board (Solder Side)

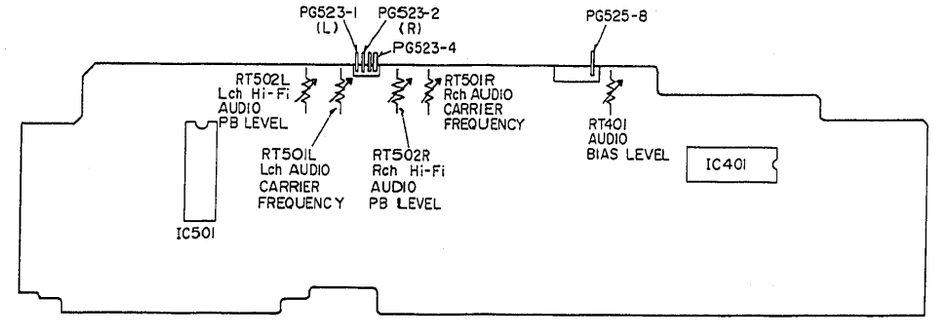


Fig. 2 Audio Circuit Board (Component Side)

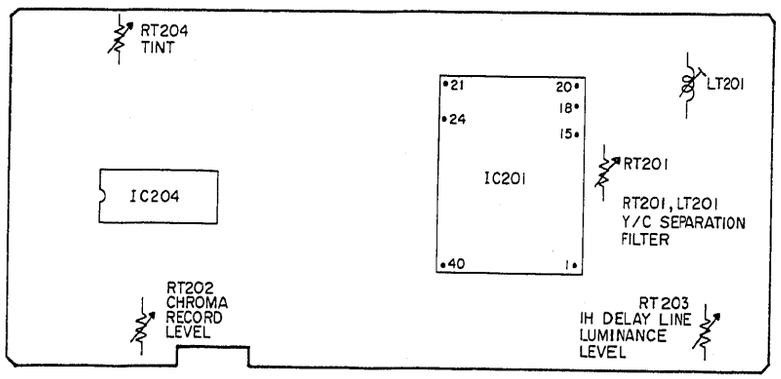


Fig. 3 Y/Chroma Circuit Board (Component Side)

1. SERVO CIRCUIT ADJUSTMENTS

1. Switching Point Adjustment

Purpose of adjustment and fault occurring if incomplete
Purpose: To set the video head switching point during play to approximately the center where the CH-1 and CH-2 envelopes overlap each other.
Fault: o The vertical sync signal is degraded and vertical jitter occurs.
o Switching noise appears across the bottom of the screen.

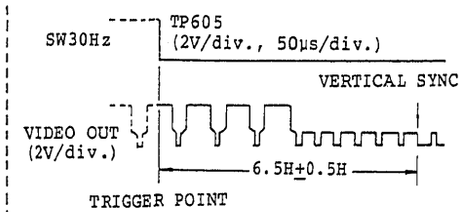
Test Equipment/Jigs	Test Equipment Connection Points	VTR State	Adjustment Point
o Oscilloscope	o CH-1: VIDEO OUT o CH-2: TP605 (SW30)	o Play alignment tape (color bar signal)	o RT601 (SWITCHING POINT)
o Alignment tape (MH-1) (Parts No.7099046)			

Adjustment Procedure

Vertical sync signal:
Set to 6.5H±0.5H from the trailing edge (trigger position) of the SW30Hz pulse.

(Settings of oscilloscope)
° Trigger with CH-2.
° Set the sync slope to "-".

Waveforms



2. Autotracking Preset Check

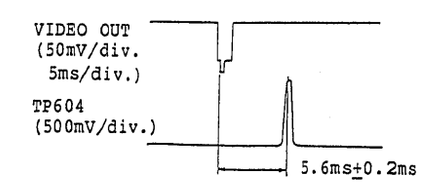
Purpose of adjustment and fault occurring if incomplete
Purpose: To check the autotracking operation by playing back tape recorded by the same VTR.
Fault: o Noise occurs on the TV screen during autotracking.
o Noise cannot be removed completely by pressing the tracking buttons.

Test Equipment/Jigs	Test Equipment Connection Points	VTR State	Adjustment Point
o Oscilloscope	o CH-1: VIDEO OUT o CH-2: TP604 (CTL)	o Play alignment tape.	——
o Alignment tape (30HMP2-1) Part No. 7099089			

Adjustment Procedure

1) Play alignment tape (AUTOTRACKING: ON).
2) Check that the waveforms on the oscilloscope are as shown on the right.
3) If they drift, check the servo circuit and adjust the X value.

Waveforms



3. Vertical Jitter Correction

Purpose of adjustment and fault occurring if incomplete
Purpose: To suppress vertical jitter during slow motion and still play.
Fault: o Vertical jitter occurs in the picture during slow motion and still play.

Test Equipment/Jigs	Test Equipment Connection Points	VTR State	Adjustment Points
o Monitor TV	o Check with monitor TV	o Record color bar signal and play it back with the same VTR	o TRACKING UP (behind the front door) o TRACKING DOWN (behind the front door)
o Color bar generator	o VIDEO IN		
o Blank tape			

Adjustment Procedure

(EP V. jitter correction):
Record in the EP mode and play back in the still mode with the same VTR.

1) Press the PAUSE button of the VTR to set it to the still play mode.
2) Suppress vertical jitter in the picture.

Waveforms

(SP V. jitter correction):
Record in the SP mode and play back in the still mode with the same VTR.

1) Press the PAUSE button of the VTR to set it to the still play mode.
2) Suppress vertical jitter in the picture.

4. Slow Brake Adjustment

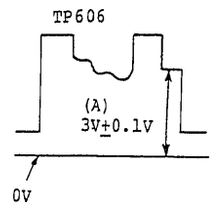
Purpose of adjustment and fault occurring if incomplete
Purpose: To set the brake control voltage of the capstan motor during slow play.
Fault: o The picture is distorted during slow play.

Test Equipment/Jigs	Test Equipment Connection Points	VTR State	Adjustment Point
o Color bar generator	o VIDEO IN	o Record color bar signal and play it back with the same VTR.	o RT602 (SLOW BRAKE)
o Oscilloscope	o TP606 (C. CONT)		
o Blank tape			

Adjustment Procedure

1) Set the DC level at section (A) of the waveform to 3.0V ± 0.1V.

Waveforms



5. EP Slow Tracking Preset Adjustment

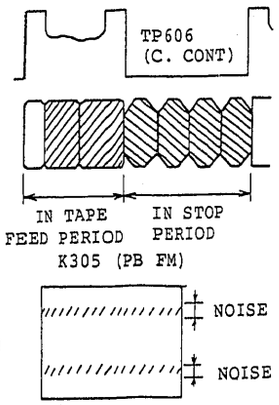
Purpose of adjustment and fault occurring if incomplete
Purpose: To adjust the timing with which brake pulses are generated for the capstan motor during slow play and minimize noise.
Fault: o Noise occurs during slow play and the picture is difficult to see.

Test Equipment/Jigs	Test Equipment Connection Points	VTR State	Adjustment Points
o Monitor TV	o Check with monitor TV	o Slow tracking: Unplug the power cord from the AC outlet to set the slow tracking to the center. o Record color bar signal and play it back with the same VTR.	o TRACKING UP (behind the front door) o TRACKING DOWN (behind the front door)
o Color bar generator	o VIDEO IN		
o Oscilloscope	o CH-1: K305 (PB FM) o CH-2: TP 606 (C. CONT)		

Checking Procedure

1) Perform recording and playback in the EP mode using the same VTR.
2) While holding the tracking (▲) and (▼) buttons on the remote control depressed, press the play button on the VTR to set the VTR to the forced slow mode.
3) Tracking: Maximize the FM envelope in the stop period during slow play. (Trigger the oscilloscope with CH-2. Set the sync slope to "-".)
4) Check that no noise appears on the monitor TV screen.
5) Press the play button to return the VTR to the play mode.
6) Set the VTR to the reverse slow mode. Adjust the tracking and check that no noise appears in the stop period during the intermittent drive. (The preset position in the forward slow mode does not change.)

Waveforms



Noises appear at the 1/8 - 1/6 positions on the screen in the tape feed period of the intermittent drive during reverse slow play.

6. SP Slow Tracking Preset Adjustment

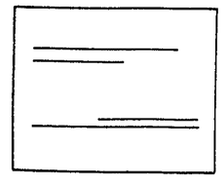
Purpose of adjustment and fault occurring if incomplete
Purpose: To adjust the timing with which brake pulses are generated for the capstan motor during slow play and minimize noise.
Fault: o Noise occurs during slow play and the picture is difficult to see.

Test Equipment/Jigs	Test Equipment Connection Points	VTR State	Adjustment Points
o Monitor TV	o Check with monitor TV	o Slow tracking: Unplug the power cord from the AC outlet to set the slow tracking to the center. o Record color bar signal and play it back with the same VTR.	o TRACKING UP (behind the front door) o TRACKING DOWN (behind the front door)
o Color bar generator	o VIDEO IN		

Checking Procedure

1) Perform recording and playback in the SP mode using the same VTR.
2) While holding the tracking (▲) and (▼) buttons on the remote control depressed, press the play button on the VTR to set the VTR to the forced slow mode.
3) Tracking: Make the slow feed noise appear across the bottom of the screen and then remove it from the bottom of the screen.
4) Check that no noise appears on the monitor TV screen.
5) Press the play button to return the VTR to the play mode.
6) Set the VTR to the reverse slow play mode. Adjust the tracking and check that no noise appears in the stop period during the intermittent drive. (The preset position in the forward slow mode does not change.)

Waveforms



TV SCREEN

Noises appear at the 1/4 positions on the screen in the tape feed period of the intermittent drive during revese slow play.

7. VISS Rewriting Check

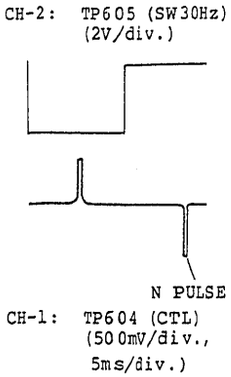
Purpose of adjustment and fault occurring if incomplete
Purpose: To check that the VISS signal is rewritten and erased normally.
Fault: o The circuit detects the unerased CTL pulse at the rewritten and erased section of the VISS signal and malfunctions.

Test Equipment/Jigs	Test Equipment Connection Points	VTR State	Adjustment Point
o Oscilloscope	o CH-1: TP604 (CTL) o CH-2: TP605 (SW30Hz)	o Play an SP recorded tape.	
o Recorded tape (SP mode)			

Checking Procedure

1) Press the VISS writing switch on the remote control and check that the "N" pulse on the oscilloscope is rewritten.
2) Press the VISS erasing switch on the remote control and check that the pulse disappears from the oscilloscope.

Waveforms



8. CTL Pulse Level Check

Purpose of adjustment and fault occurring if incomplete
Purpose: Check that the CTL pulse is recorded at a saturation level and the playback amp gain operates normally.
Fault: o The servo circuit becomes unlocked when recording and playback are performed using the same VTR and different VTRs.

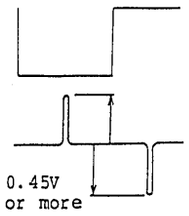
Test Equipment/Jigs	Test Equipment Connection Points	VTR State	Adjustment Point
o Oscilloscope	o CH-1: TP604 (CTL) o CH-2: TP605 (SW30Hz)	o Record in the EP mode and play back with the same VTR.	
o Color bar generator	o VIDEO IN		
o Blank tape			

Checking Procedure

1) Check that the CTL pulse level on the oscilloscope is 0.45V or more.

Waveforms

CH-2: TP605 (SW30Hz) (2V/div.)



CH-1: TP604 (CTL) (500mV/div., 5ms/div.)

9. Soft Landing Speed Adjustment

Purpose of adjustment and fault occurring if incomplete
Purpose: To adjust the warp search speed. (Capstan motor speed adjustment during fast forward and rewind)
Fault: o The fast forward or rewind speed becomes faster or slower.
o The picture fluctuates during warp search.

Test Equipment/Jigs	Test Equipment Connection Points	VTR State	Adjustment Points
o Oscilloscope	o TP651 (C. FG)	o Load a bank tape. o Connect TP601 and TP603 and set to the test mode.	o RT651 (LOW SPEED) o RT652 (HIGH SPEED)
o Blank tape			

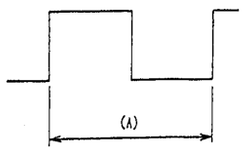
Checking Procedure

(Low speed adjustment: RT651)
1) Set the VTR to the fast forward mode.
2) Set the period of the waveform on the oscilloscope to 470µs ± 10µs.

(High speed adjustment: RT652)
1) Set the VTR to the rewind mode.
2) Set the period of the waveform on the oscilloscope to 77µs ± 1µs.

Waveforms

TP651 (C. FG)



At low speed : (A) = 470 µs ± 10 µs
At high speed: (A) = 77 µs ± 1 µs

2. VIDEO CIRCUIT ADJUSTMENTS

1. Y/Chroma Separation Filter Adjustment

Purpose of adjustment and fault occurring if incomplete
Purpose: To separate the luminance (Y) and chroma (C) signals from the video signal.
Fault: o Colors smear.
o Moire pattern occurs.

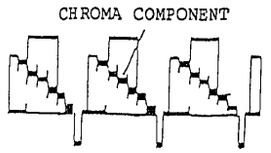
Test Equipment/Jigs	Test Equipment Connection Points	VTR State	Adjustment Point
o Color bar generator	o VIDEO IN	o Apply color bar signal and set the VTR to the EE mode.	o RT201 o LT201 (Y/C SEPARATION FILTER)
o Oscilloscope	o IC201-24		

Adjustment Procedure

1) RT201: Minimize chroma component.
2) LT201: Further minimize chroma components.
3) Perform steps 1) and 2) again.

Waveforms

CHROMA COMPONENT



2. 1H Delay Luminance Level Adjustment

Purpose of adjustment and fault occurring if incomplete
Purpose: To align the luminance levels of the main playback signal and 1H delayed signal.
Fault: o The S/N deteriorates.
o Skew occurs in the slow motion and still pictures.
o Dropout cannot be compensated.

Test Equipment/Jigs	Test Equipment Connection Points	VTR State	Adjustment Point
o Alignment tape (MH-1) (Part No.7099046)		o Play color bar signal of alignment tape.	o RT203 (1H DELAY LINE LUMINANCE LEVEL)
o Oscilloscope (0.1V/div., 20µs/div.)	o CH-1: IC201-15 o CH-2: IC201-18		

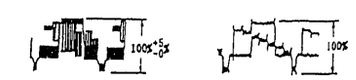
Adjustment Procedure I

1) RT203: Set the amplitude of the CH-1 waveform to 100% +5%/-0% that of the CH-2 waveform.

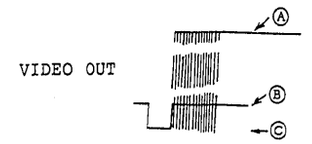
Adjustment Procedure II

2) Apply a color bar signal to the VIDEO IN jack and record it in the SP mode, then play it back in the slow mode using the same VTR.
3) Press the slow tracking switch so noise appears across the upper half (1/4) of the monitor screen and set the VTR to the still play mode.
4) Make the video output waveform appear on the oscilloscope and adjust RT203 so sections A, B and C are parallel.
5) Check that skew does not occur on the monitor screen.

Waveforms



CH-1 IC201-15 CH-2 IC201-18



3. Chroma Recording Level Adjustment

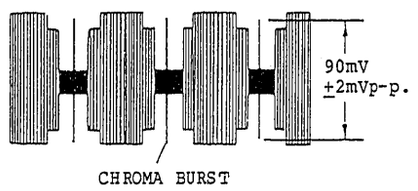
Purpose of adjustment and fault occurring if incomplete
Purpose: To set the chroma recording level to an optimum level.
Fault: o Beats occur
o Coloring becomes defective.

Test Equipment/Jigs	Test Equipment Connection Points	VTR State	Adjustment Point
o Color bar generator	o VIDEO IN	o Receive a color bar signal (line input) o REC mode o EP mode	o RT202 (CHROMA RECORD LEVEL)
o Oscilloscope (50mV/div., 20µs/div.)	o TP1852		

Adjustment Procedure

RT202: Set the chroma burst level to 90mV±2mVp-p.

Waveform



4. TINT Adjustment

Purpose of adjustment and fault occurring if incomplete
Purpose: To set the tint during play to a reference level.
Fault: o Tint becomes abnormal.

Test Equipment/Jigs	Test Equipment Connection Points	VTR State	Adjustment Point
o Color bar generator	o VIDEO IN	o Receive color bar signal and play back with the same VTR (SP mode)	o RT204 (TINT)
o Vectorscope	o VIDEO OUT		
o Monitor TV	o VIDEO OUT		

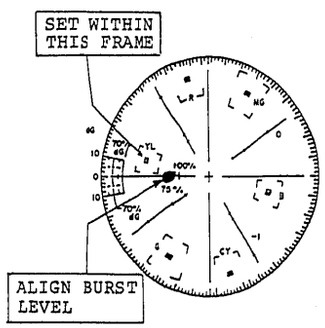
Adjustment Procedure

- When using a vectorscope -
1) Align the burst signal with 75%.
2) Adjust so the YL (yellow) level is within section "⊞" on the vectorscope.
3) Check that the tint is optimum on the monitor TV screen.

Note: If the chroma levels do not align, adjust the GAIN control of the vectorscope.

- When using a monitor TV -
1) Observing the monitor TV screen, adjust so the tint is optimum.

Waveform



3. AUDIO CIRCUIT ADJUSTMENT

1. Carrier Frequency Adjustment

Purpose of adjustment and fault occurring if incomplete
Purpose: To set the audio carrier frequency to the specified value.
Fault: o Compatibility with tapes recorded by another VTR cannot be obtained.
o Hi-Fi audio is not played back.

Test Equipment/Jig	Test Equipment Connection Points	VTR State	Adjustment Points
o Frequency counter	o PG523-1 (when adjusting RT501L) o PG523-2 (when adjusting RT501R)	o REC mode	o RT501L (L-CH) o RT501R (R-CH) (CARRIER FREQUENCY)

Adjustment Procedure

RT501L:
The frequency counter reads 1300kHz±4kHz at PG523-1.

RT501R:
The frequency counter reads 1700kHz±4kHz at PG523-2.

2. Hi-Fi Audio Playback Level Adjustment

Purpose of adjustment and fault occurring if incomplete
Purpose: To set the Hi-Fi audio playback level to the specified value.
Fault: o The optimum volume cannot be obtained.

Test Equipment/Jigs	Test Equipment Connection Points	VTR State	Adjustment Points
o VTVM o Hi-Fi alignment tape (24HMASF-2) (Parts No.7099153)	o When adjusting RT502L: AUDIO OUT L o When adjusting RT502R: AUDIO OUT R	o Play Hi-Fi alignment tape.	o RT502L (L-CH) o RT502R (R-CH) (AUDIO PLAYBACK LEVEL)

Adjustment Procedure

(Adjust RT502L and RT502R in the same way.)

Set the reading of the VTVM to -4.8±0.1 dBs.

3. Recording/Playback Envelope Check

Purpose of adjustment and fault occurring if incomplete
Purpose: To check the outputs of the Hi-Fi audio heads and preamplifiers.
Fault: o Hi-Fi sound is not output.

Test Equipment/Jigs	Test Equipment Connection Points	VTR State	Adjustment Point
o Color bar generator	o VIDEO IN	o Record color bar signal as video without audio signal. o SP mode	——
o Oscilloscope	o CH-1: PG523-1 o CH-2: PG523-4		

Adjustment Procedure

1) Play back the recorded tape.
2) Trigger the oscilloscope with PG523 pin 4 (SW30Hz-A).
3) Observe the waveforms on the oscilloscope and check that the amplitudes of the CH-1 and CH-2 envelopes are 120mVp-p or higher.
4) If the above values are not obtained, check (or replace) the cylinder or pre/rec amplifier.

4. AUDIO OUT-2 Jack Output Level Adjustment

Purpose of adjustment and fault occurring if incomplete
Purpose: To check the output level at the AUDIO OUT-2 jack.
Fault: o Sound becomes abnormal.

Test Equipment/Jigs	Test Equipment Connection Points	VTR State	Adjustment Point
o C/R oscillator	o AUDIO IN (L-CH)	o E-E mode	——
o VTVM	o AUDIO OUT (L-CH)		

Adjustment Procedure

1) Adjust the output level of the C/R oscillator so the VTVM reads -4.8±0.1 dBs. (1kHz sine wave)
2) Connect the VTVM to the AUDIO OUT-2 jack.
3) Check that the VTVM reads -4.8±2 dBs with the headphone level control set to the center.
4) Check that the VTVM reads +2.2±3 dBs with the headphone level control set to maximum.
5) If the above values cannot be obtained, check (or replace) the circuit on the audio circuit board, output jack nad headphone level control.

5. EE Audio Level Check

Purpose of adjustment and fault occurring if incomplete
Purpose: To check the audio level in the EE mode.
Fault: o Sound is abnormal in the EE mode.

Test Equipment/Jigs	Test Equipment Connection Points	VTR State	Adjustment Point
o C/R oscillator	o AUDIO IN (L-CH)	o E-E mode	——
o VTVM	o AUDIO OUT-1 (L-CH)		

Adjustment Procedure

1) Apply a 1kHz, -7.8dB sine-wave signal to the AUDIO IN jack.
2) Check that the VTVM reads -5.8 ± 2 dBs when the recording level control (RV751) is set to the center.
3) If the above value cannot be obtained, check the audio circuit board and EE audio line.

6. Bass Boost Level Check

Purpose of adjustment and fault occurring if incomplete
Purpose: To check that low-frequency amplification of the theater sound.
Fault: o The low-frequency is not amplified and sound does not change when the theater switch is turned on.

Test Equipment/Jigs	Test Equipment Connection Points	VTR State	Adjustment Point
o C/R oscillator	o AUDIO IN (L-CH)	o E-E mode	——
o VTVM	o AUDIO OUT-1 (L-CH)		

Adjustment Procedure

1) Apply a 50 Hz, -27.8 dBs sine-wave signal to the AUDIO IN jack.
2) Check that the audio level on the VTVM is raised by 16 dBs ± 3 dBs when the theater switch (S751) is turned on when compared to the level when it is turned off.

7. Audio Bias Level Adjustment

Purpose of adjustment and fault occurring if incomplete
Purpose: To set the recording bias to the optimum level.
Fault: o Bias too high: High-frequency response deteriorates.
o Bias too low : Sound tends to be distorted.

Test Equipment/Jig	Test Equipment Connection Points	VTR State	Adjustment Point
o VTVM	o PG525-8 (BIAS)	o No-signal record mode (SP mode)	o RT401

Adjustment Procedure

Set the reading of the VTVM to 67.0mV ± 1.0mV.

(Frequency response check)
1) Connect a C/R oscillator to the AUDIO IN jack.
2) Connect a VTVM to the AUDIO OUT jack.
3) Apply the 1kHz and 5kHz sine-wave signals with the -28dBs level and check that the difference in the recording/playback outputs (EP mode) is within ±3 dB.
4) If the difference in the recording/playback output levels is over ±3 dB, change the audio bias level according to the following table. (Readjust)

Difference between 1kHz/5kHz	-5dB or less	-5 - -3dB	-3 - +3dB	+3 - +5dB	+5dB or more
Bias readjustment	-16mV	-10mV	0mV	+10mV	+16mV

8. MPX Separation Adjustment

Purpose of adjustment and fault occurring if incomplete
Purpose: To optimize the separation between left and right channels when receiving a stereo or sound multiplex broadcast.
Fault: o The separation between L and R (main and sub) channels becomes defective.

Test Equipment/Jig	Test Equipment Connection Points	VTR State	Adjustment Point
o Monitor TV (receiving a sound multiplex broadcast)	o Check with monitor TV	o Receive a stereo or sound multiplex broadcast. o Audio monitor: (switched by remote control)	o RT801 (MPX SEPARATION)

Adjustment Procedure

When receiving a stereo broadcast:
Optimize the stereo separation.
When receiving a sound multiplex broadcast:
Adjust so the main and sub speech sounds are not mixed.

9. Level Meter Adjustment

Purpose of adjustment and fault occurring if incomplete
Purpose: To make the level meter operate correctly.
Fault: o The level meter does not operate normally.

Test Equipment/Jig	Test Equipment Connection Points	VTR State	Adjustment Point
o C/R oscillator o VTVM	o AUDIO IN L o AUDIO OUT L	o Line input mode (recording level: position 5)	o TRACKING UP/DOWN (on remote control) o Meter switch (behind front panel)

Adjustment Procedure

1) Adjust the Input level of the CR oscillator so the VTVM reads -4.3 +0.5/-0 dB. (Input frequency: 1kHz)
2) Press the tracking up and down switches on the remote control simultaneously and then press the meter switch on the VTR front panel (behind the front door) and hold them depressed for one second or more.
3) Check that the 0dB segment light in the level meter.
4) Minimize the recording level and check that -40dB segment does not light.

4. OSD AND JACK CIRCUIT ADJUSTMENT

1. Title Recording Level Adjustment

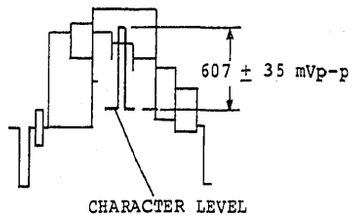
Purpose of adjustment and fault occurring if incomplete
Purpose: To set the luminance level of the title characters.
Fault: o The brightness of the title characters is too high or too low.

Test Equipment/Jigs	Test Equipment Connection Points	VTR State	Adjustment Point
o Color bar generator o Oscilloscope	o VIDEO IN o TP301	o Apply 2Vp-p video signal from the color bar generator.	o RT301 (TITLE RECORD LEVEL)

Adjustment Procedure

1) Set the VTR to the title preparation mode and record title characters.
2) Observe the waveform on the oscilloscope and check that the character level is 85 ± 5 IRE (607 ± 35 mVp-p).

Waveform



2. Character Position Adjustment

Purpose of adjustment and fault occurring if incomplete
Purpose: To set the position of characters displayed on the screen.
Fault: o The display position of characters is drifted.

Test Equipment/Jig	Test Equipment Connection Points	VTR State	Adjustment Point
o Color bar generator o Monitor TV	o VIDEO IN o Check with monitor TV	o Receive color bar signal (line input) o Set to the title mode	o RT1401 (CHARACTER POSITION)

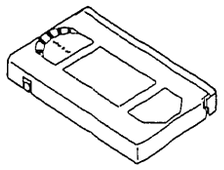
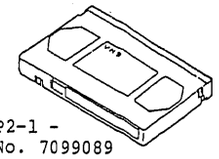
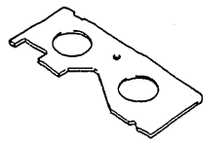
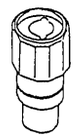
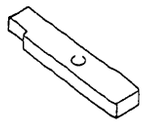
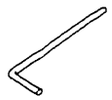
Adjustment Procedure

1) Set the VTR to the title preparation mode.
2) RT1401: Set the center of the entire title picture frame to the center of the screen.

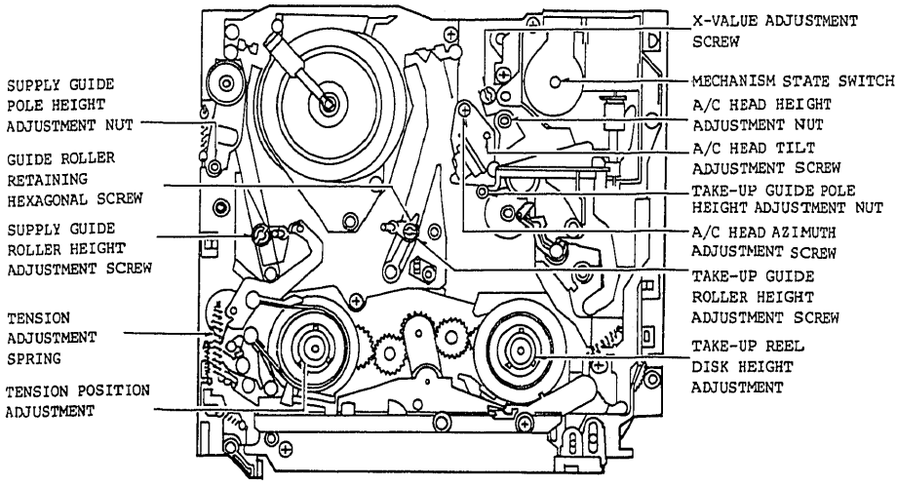
CHAPTER 4

MECHANISM ADJUSTMENT

JIGS AND TAPES FOR ADJUSTMENT

1. Back Tension Meter Parts No. 7099004 	2. Alignment Tape - MH-1 - Parts No. 7099046 - 24HMASF-2 - Parts No. 7099153  - 30HMP2-1 - Parts No. 7099089	3. Master Plane Parts. No. 7099279 
4. Torque Gauge Parts No. 7099039 	5. Torque Gauge Adapter Parts No. 7099035 	6. Reel Disk Height Jig Parts No. 7099038 
7. 1.5mm Hexagonal Wrench 0.9mm Hexagonal Wrench 	—	—

ADJUSTMENT PARTS LOCATIONS


SUPPLY GUIDE POLE HEIGHT ADJUSTMENT NUT
GUIDE ROLLER RETAINING HEXAGONAL SCREW
SUPPLY GUIDE ROLLER HEIGHT ADJUSTMENT SCREW
TENSION ADJUSTMENT SPRING
TENSION POSITION ADJUSTMENT
X-VALUE ADJUSTMENT SCREW
MECHANISM STATE SWITCH
A/C HEAD HEIGHT ADJUSTMENT NUT
A/C HEAD TILT ADJUSTMENT SCREW
TAKE-UP GUIDE POLE HEIGHT ADJUSTMENT NUT
A/C HEAD AZIMUTH ADJUSTMENT SCREW
TAKE-UP GUIDE ROLLER HEIGHT ADJUSTMENT SCREW
TAKE-UP REEL DISK HEIGHT ADJUSTMENT

Top View of Mechanism

MECHANICAL PARTS ADJUSTMENT

1) Mechanism State Switch Adjustment

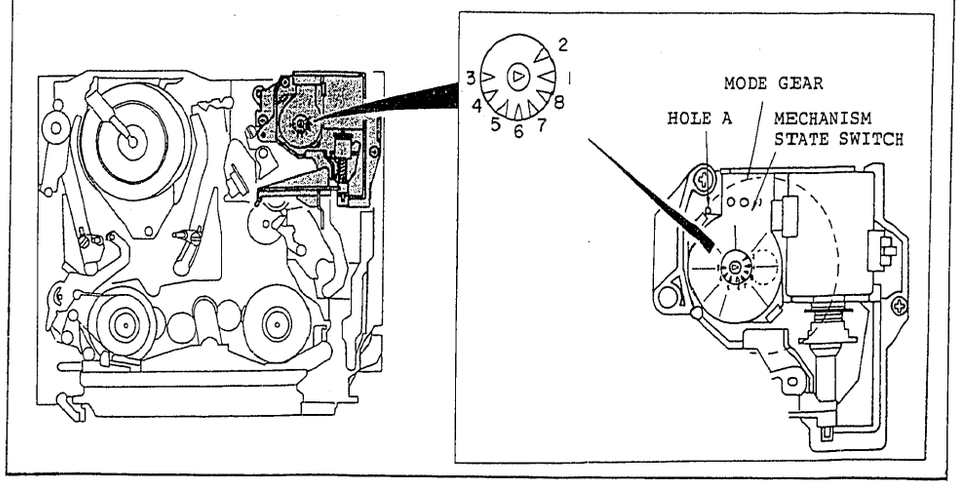
Purpose: To detect the mechanism state correctly and prevent malfunctions.

Test Equipment/Jigs	Preparation for Adjustment	State of VTR	Adjustment Points
o Blank tape	---	o Eject mode (with the cassette ejected)	o Mechanism state switch o Mode gear

Adjustment Procedure

(1) Check that the arrow on the center shaft of the mechanism state switch points to the arrow of mechanism mode indication number 1. Also check that hole (A) beside the mechanism state switch and the hole in the mode gear are aligned.
(2) If the above alignments are not obtained, adjust as follows.
  1. Remove the mechanism state switch/loading motor assembly. (See "MAIN MECHANICAL COMPONENTS REMOVAL" in CHAPTER 2)
  2. Move the mode gear to align the position of hole (A).
  3. Turn the gear on the back of the mechanism state switch so that the arrow on the center shaft of the switch points to the arrow of mechanism mode indication number 1.
  4. Reinstall the mechanism state switch/loading motor assembly in the above condition.
(3) Load a blank tape and perform various operations to check that loading and unloading are performed correctly.

Adjustment diagram



TAPE TRANSPORT SYSTEM PARTS ADJUSTMENT

The tape transport system is the path from the supply reel disk passing through the video heads to the take-up reel disk. The transport system parts, especially the parts which directly come into contact with a tape, should be kept clean without scratches, dust, oil, etc. The tape transport system has been adjusted before the unit is shipped from the factory. Therefore, when parts in the transport system are replaced, the transport system is stabilized by only adjusting the new parts correctly.

1. Reel Disk Height Adjustment

Purpose: To set the reels of the cassette to the specified height, thus determininig the height of tape.

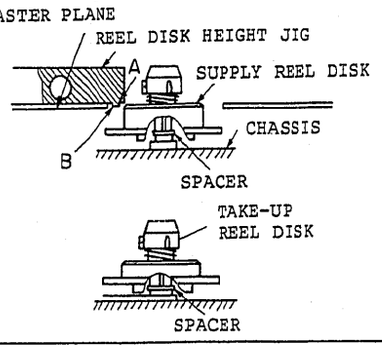
Test Equipment/Jigs	Preparation for Adjustment	State of VTR	Adjustment Points
o Master plane (Parts No. 7099279) o Reel disk height jig (Parts No. 7099038)	1) Remove the cassette loading mechanism. 2) Mount the master plane and place the reel disk height jig on it.	—	o Spacers in the supply and take-up reel disks

Adjustment Procedure

(1) Check that the reel disk is between sections A and B of the reel disk height jig.
(2) If the disk is not between sections A and B of the jig, replace the spacer (0.25mm and 0.5mm thick) in the reel disk or adjust them.

(Caution)
When the tension arm and tension band are removed, adjust the tension pole position and tension after reinstalling them.

Adjustment diagram



2. Tension Pole Position and Tension Adjustment

Purpose: To make the tension of tape constant so that the contact between the video heads and tape is stabilized

Test Equipment/Jigs	Preparation for Adjustment	State of VTR	Adjustment Points
Position adjustment —	—	1) Remove the top cover. 2) Set the VTR to the loading state without inserting a cassette. (See page 4-7)	Position adjustment: Tension band holder
Tension adjustment o Tension cassette (Parts No. 7099004)	—	Tension adjustment 3) Play the tension cassette.	Tension adjustment: Tension spring hooking position.

Adjustment procedure

- Position Adjustment -

1) Insert a flat bladed screwdriver into the groove for the tension position adjustment and set the clearance between the tension arm and chassis to 0 - +0.1 mm.
2) After adjustment is completed, perform loading without inserting a cassette and recheck the tension pole position.

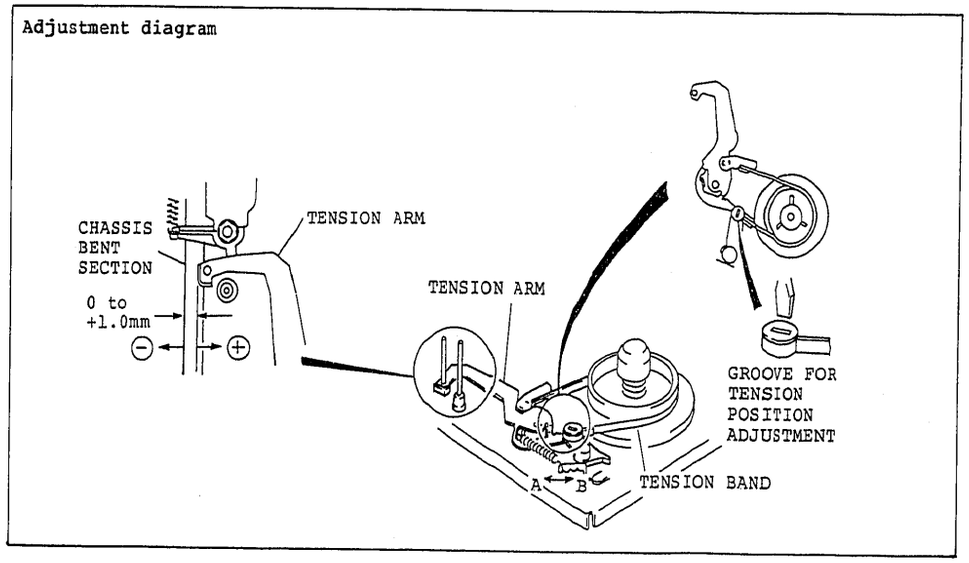
- Tension Adjustment -

Reading of tension cassette: 34 to 44 g-cm (standard value)

If the reading is higher than the standard value, move the spring in the direction of arrow (A).
If the reading is lower than the standard value, move the spring in the direction of arrow (B).

Caution: When the tension position was changed greatly (more than 6 g-cm), recheck the tension pole position.
If it is drifted, readjust the tension pole position and tension.

Adjustment diagram



3. Guide Pole Height Adjustment

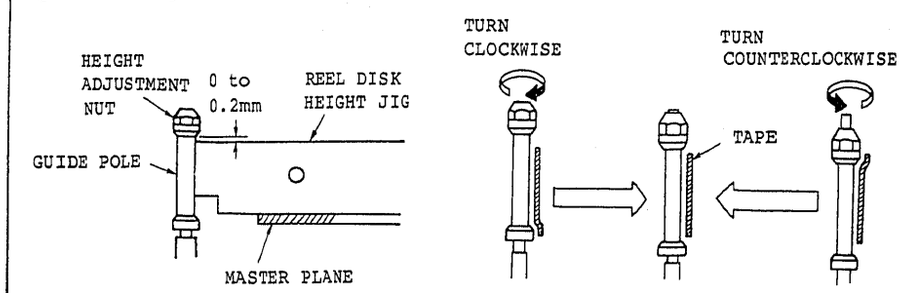
Purpose: To regulate the tape height.

Test Equipment/Jigs	Preparation for Adjustment	State of VTR	Adjustment Points
o Master plane (Parts No. 7099279) o Reel disk height jig (Parts No. 7099038)	1) Remove the cassette loading mechanism. 2) Mount the master plane and place the reel disk height jig on it.	—	o Nuts on the supply and take-up guide poles
Blank tape	—	o Playback mode	

Adjustment procedure

1) Set the clearance between the bottom of the guide pole's upper flange and top of the reel disk height jig is 0 to 0.2 mm.
2) Load a blank tape to run it and check that the tape does not ride over the upper and lower flanges of the guide pole.
3) If the tape rides over either flange, adjust the height of guide pole as follows.
If the tape rides over the upper flange, turn the nut counterclockwise.
If the tape rides over the lower flange, turn the nut clockwise.

Adjustment diagram



4. Guide Roller Height Adjustment

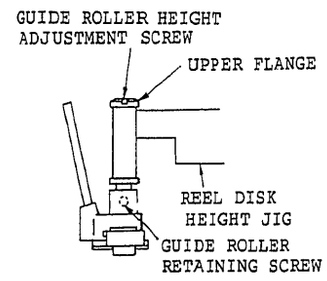
Purpose: To regulate the height of tape so that the bottom of tape runs along the tape guide line on the cylinder.

- Coarse Adjustment -

Test Equipment/Jigs	Preparation for Adjustment	State of VTR	Adjustment Points
o Master plane (Parts No. 7099279) o Reel disk height jig (Parts No. 7099038) o 0.9mm hexagonal wrench	1) Remove the cassette loading mechanism. 2) Mount the master plane and place the reel disk height jig on it.	—	o Height adjustment screws on the supply and take-up guide rollers

Adjustment procedure
1) Loosen the guide roller retaining screw (so that the guide roller does not turn during loading, unloading and play).
2) Align the bottom of the guide roller's upper flange and the top of the reel disk height jig.
3) Perform the precise adjustment continuously.

Adjustment diagram



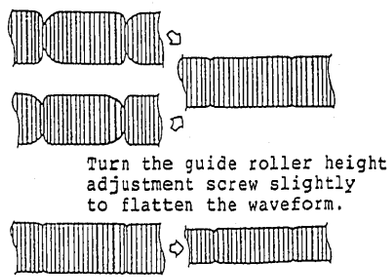
- Precise Adjustment -

Test Equipment/Jigs	Test Equipment Connection Points	State of VTR	Adjustment Points
o Oscilloscope	o CH-1: K305 o CH-2: TP605	o Play alignment tape.	o Guide roller height adjustment screws.
o Alignment tape (30HMP2-1) (Parts No. 7099089) o Hexagonal wrench			

Connection diagram
See connection diagram 1 on page 4-11 for the connection of test equipment. Play alignment tape to operate the autotracking function when short-circuiting the specified positions.

Adjustmnet procedure
1) Tracking control (playback): Center position (When this adjustment is performed after the cylinder has been replaced, set the tracking control so that the FM output is maximum.)
2) Height adjustment screw: Flatten the FM waveform.
3) Press the tracking control buttons up (▲) and down (▼) on the remote control.
4) Check that the drops of FM output are uniform at the start and end.
5) Tighten the guide roller retaining screw.

Waveform diagrams


Turn the guide roller height adjustment screw slightly to flatten the waveform.
Autotracking: ON
Press the tracking control buttons.

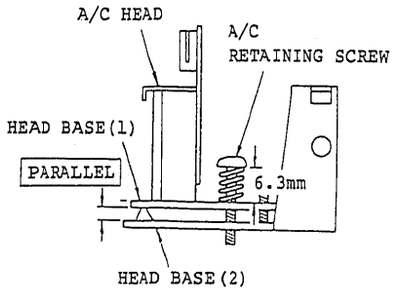
5. Audio/Control (A/C) Head Adjustment

Purpose: To keep the contact between the tape and head even so the specified track is recorded and played back.

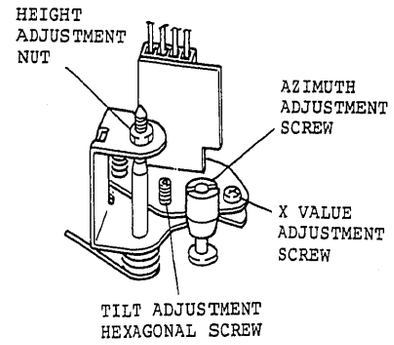
- Coarse Adjustment -

Test Equipment/Jigs	Preparation for Adjustment	State of VTR	Adjustment Points
o Master plane (Parts No. 7099279) o Reel disk height jig (Parts No. 7099038) o 1.5mm hexagonal wrench	1) Remove the cassette loading mechanism. 2) Mount the master plane.	—	o A/C head retaining screw o Azimuth adjustment screw o Height adjustment nut o Tilt adjustment hexagonal screw
o Blank tape		o Run the blank tape	

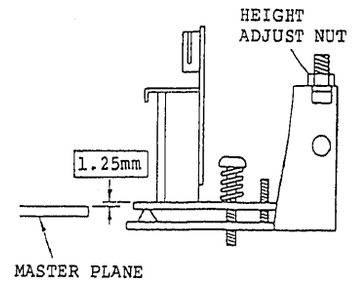
Adjustment procedure/adjustment diagrams
1) A/C head retaining screw: Check that the spring section of the A/C head retaining screw protrudes 6.3mm over the top of head base (1).



2) Tilt adjustment hexagonal screw, azimuth adjustment screw: Make head bases (1) and (2) parallel.

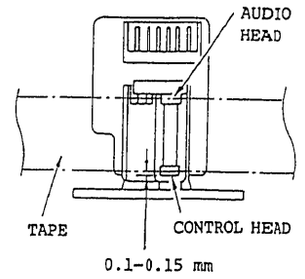


3) Height adjustment nut: Set the clearance between the master plane and head base (1) to approx. 1.25 mm.



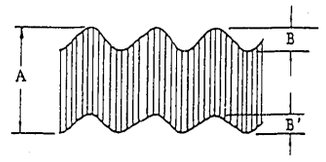
4) Remove the adjustment jigs, load blank take and set the VTR to the play mode.

5) Check that there is no conspicuous curling and riding over around the A/C head. If there is conspicuous curling or riding over, readjust the tilt adjustment hexagonal screw, azimuth adjustment screw and height adjustment nut. When the bottom edge of tape is 0.1 to 0.15 mm from the bottom edge of the control head's core, the height of A/C head is ideal.

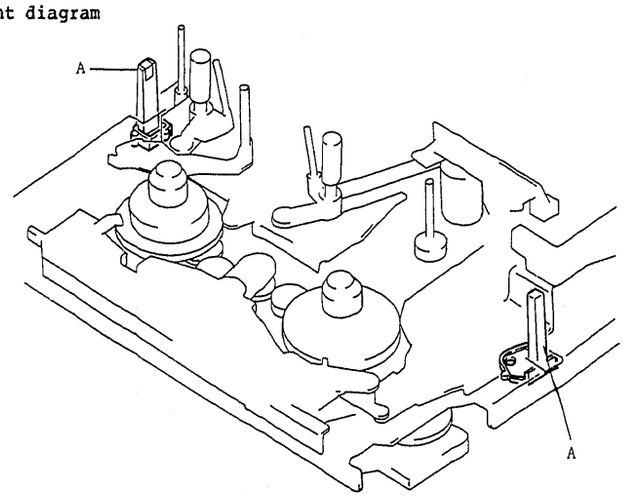


6) Perform the precise adjustment continuously.

- Precise Adjustment -

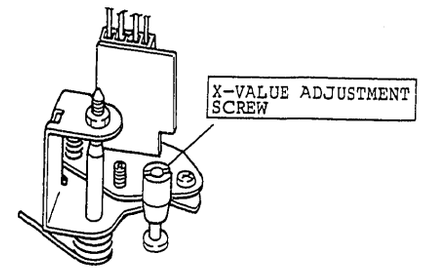
Test Equipment/Jigs	Test Equipment Connection Point	State of VTR	Adjustment Points
o Oscilloscope o Alignment tape (30HMP2-1 or MH-1) (Parts No. 7099046 or 7099089) o 1.5mm hexagonal wrench	o Audio output jack —	o Play alignment tape (7kHz section of 30HMP2-1 or MH-1)	o Azimuth adjustment screw o Height adjustment nut o Tilt adjustment hexagonal screw
Adjustment procedure 1) Adjust the azimuth adjustment screw, height adjustment nut and tilt adjustment hexagonal screw slightly and alternately. Make the audio output maximum and flat (minimum fluctuations).		**Waveform diagram**  A: Maximum BB': Minimum	

6. To set VTR to the loading state without inserting a cassette

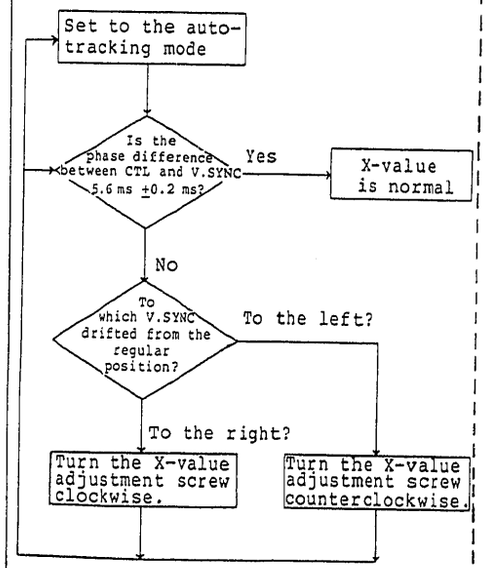
1) Remove the top cover and front panel. 2) Remove the cassette loading mechanism. 3) Unplug the power cord form the AC outlet. 4) Cover the supply and take-up end sensors (sections A in the figure below) with black masking tape, etc. to shut off the light. 5) Plug the power cord into the AC outlet. 6) Turn the VTR on. The VTR can accept the inputs of each mode in this state. However, the rewind operation cannot be performed for more than a few seconds because the take-up reel disk is in the stop state and reel pulses cannot be detected.	(Cautions) Always return the VTR to the original state in the following order after the above operations have been performed. 1) Remove the masking tape, etc. from the supply and take-up end sensors. 2) Unplug the power cord from the AC outlet to reset the system control micro-processor.
Adjustment diagram 	

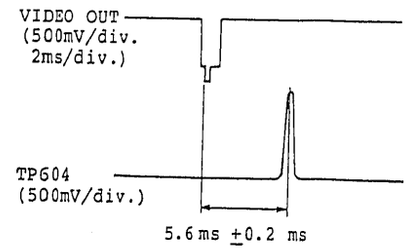
7. X Value Adjustment

Purpose: To make compatible with other VTRs.

Test Equipment/Jigs	Test Equipment Connection Points	State of VTR	Adjustment Point
o Oscilloscope o Aligment tape (30HMP2-1 or MH-1) (Parts No.7099046 or 7099089) o 1.5mm hexagonal wrench	o CH-1: VIDEO OUT o CH-2: TP604 (CTL) ---	o Play alignment tape (step waveform if MH-1 alignment tape is used).	o X value adjustment screw
Connection diagram See page 4-11 for the connection 2 of test equipment.			

Adjustment procedure
Adjust so that the phase different between the CTL pulse (positive pulse) and the V.SYNC component in the video signal is 5.6ms ± 0.2 ms when the autotracking function operates.


Set to the auto-tracking mode
Is the phase difference between CTL and V.SYNC 5.6 ms ±0.2 ms?
Yes
X-value is normal
No
To which V.SYNC drifted from the regular position?
To the left?
To the right?
Turn the X-value adjustment screw clockwise.
Turn the X-value adjustment screw counterclockwise.



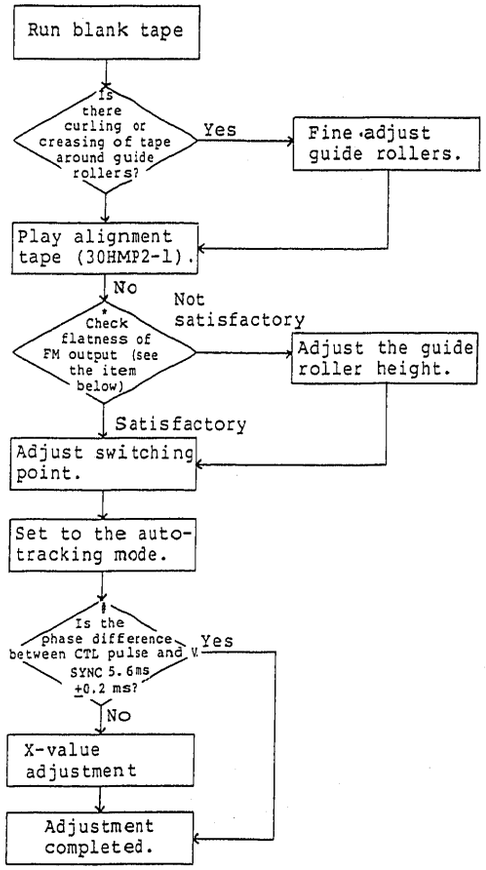
8. Adjustments After Replacing Cylinder (Video Heads)

Purpose: To suppress drift in the height relative to the guide roller and drift of the X value after replacing the cylinder.

Test Equipment/Jigs	Test Equipment Connection Points	State of VTR	Adjustment Points
• Oscilloscope	Checking the flatness • CH-1: k305 • CH-2: TP605	• Run the blank tape • Play alignment tape	• Guide rollers (precise adjustment on page 4-5) • Switching point (page 3-5) • X value (page 4-8)
• Alignment tapes 30HMP2-1 or MH-1 (Parts No.7099046) (Parts No.7099089) • Blank tape • 1.5mm, 0.9mm hexagonal wrench • X value adjustment screwdriver	—		

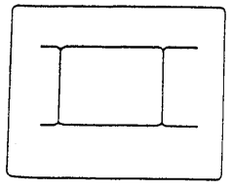
Checking/adjustment procedure

Connect test equipment referring to connection diagram 1 on page 4-11 when checking the item marked *.
Connect test equipment referring to connection diagram 2 on page 4-11 when checking the item marked #.

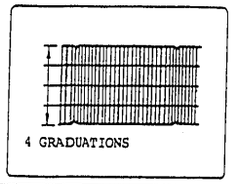


Checking procedure of the flatness and fluctuations of FM output and waveform diagrams

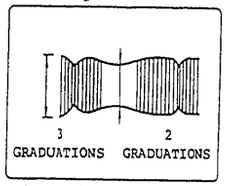
1) Set to the autotracking mode.



2) Fine tune the voltage level range of the oscilloscope to set the FM output to 4 graduations.



3) Press the tracking control buttons to set maximum amplitude of the FM output to 3 graduations.
4) Check that the minimum amplitude is more than 2 graduations.



5) Check that the level fluctuations between the maximum and minimum amplitudes are less than 13%.

9. Tension/Torque Checks

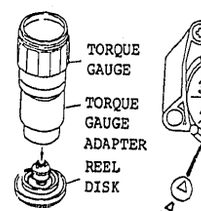
Purpose: It is necessary to check the tension, torque and compression force at the tape take-up section and moving section to make the tape running smooth and satisfy the basic performance of the VTR. Check these if the tape running is not smooth or the tape speed is abnormal.

Test Equipment/Jigs	State of VTR
o Torque gauge o Torque gauge adapter	o See the VTR to the operation modes without inserting a cassette. (See page 4-7)

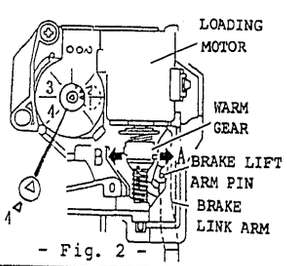
Item	VTR operation mode	Measured reel	Measured value
Main brake torque	Stop (Note-1)	Supply & take-up reels	50g.cm or more
Slack removal torque	Unloading	Supply reel	90 - 250g.cm
Fast forward torque	Fast forward	Take-up reel	400g.cm or more
Rewind torque	Rewind	Supply reel	400g.cm or more
Take-up torque	Play	Take-up reel	70 - 170g.cm
Back-tension torque	Fast forward	Supply reel	1 - 20g.cm
	Rewind	Take-up reel	

Checking method
The values are measured using a torque gauge and torque gauge adapter with the torque gauge fixed. (Fig. 1)
Note-1 (Fig. 2)
Turn the worm gear in the direction of arrow (A) in the stop mode and shift the pointer on the mechanism state switch to "3" so as to apply the main brake to the supply reel disk. Then turn the worm gear in the direction of arrow (B) so that the brake link arm is released from brake lift arm pin (set the reel drive idler to the center position).

Adjustment diagram



- Fig. 1 -



- Fig. 2 -

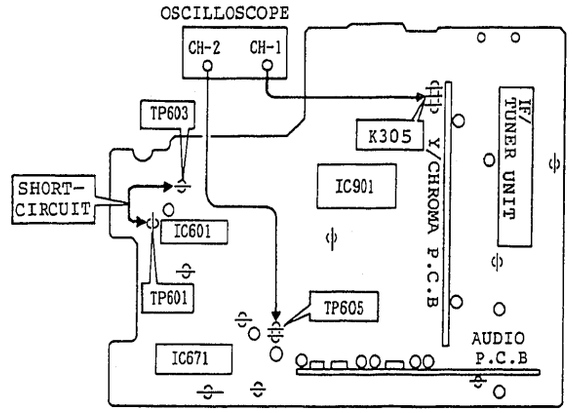
10. Connection Diagram

Connect test equipment as shown below when performing the guide roller height adjustment (precise adjustment) and adjustments after replacing the cylinder (video heads).

Connection diagram 1

o Test mode
Connect TP601 and TP603.

(Oscilloscope Settings)
o Trigger with CH-2.
o Set the sync slope to "-".



SSJ (Servo/System Control/Jack) Circuit Board (Solder Side)

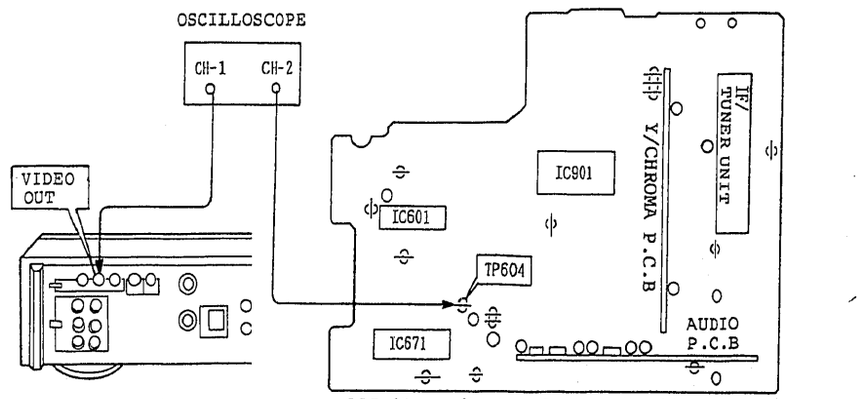
o Caution when performing mechanism adjustment

1. To set the test mode

Connect TP601 and TP603 on the SSJ circuit board to set the servo circuit to the EP play mode (test mode).

Perform the connections below when adjusting the X-value.

Connection diagram 2



Rear of VTR

SSJ (Servo/System Control/Jack) Circuit Board (Solder Side)

MAINTENANCE/INSPECTION PROCEDURE

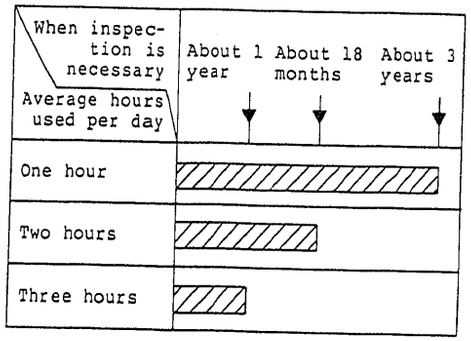
1. Required Maintenance

The recording density of a VTR is much higher than that of an audio tape recorder. VTR components must be very precise, at tolerances of 1/1000 mm, to ensure compatible with other VTRs. If any of these components are worn or dirty, the symptoms will be the same as if the part is defective. To ensure a good picture, periodic inspection and maintenance, including replacement of worn-out parts and lubrication, is necessary.

2. Scheduled Maintenance

Schedules for maintenance and inspection are not fixed because they are greatly according to the way in which the customer uses the VTR, and the environment in which the VTR is used. But, in general home use, a good picture will be maintained if the inspection and maintenance is done every 1,000 hours. The table below shows the relation between time used and inspection period.

Table 1



3. Check before starting Repairs

The following faults can be remedied by cleaning and oiling. Check the need for lubrication and the conditions of cleanliness in the unit. Check with the customer to find out how often the unit is used. If from that you determine that the unit is ready for inspection and maintenance, check the following parts.

Table 2

Phenomenon	Inspection Location
Poor S/N, no color	Dirt on video head or worn video head
Tape does not run or tape is slack	Dirt on pressure roller, reel belt or flywheel belt
Vertical jitter, horizontal jitter	Dirt on video head or in tape transport system
Color beats	Dirt on full-erase head
Low volume or sound distorted	Dirt on audio/control head
Fast forward or rewind is not done or rotation is slow	Dirt on reel belt

4. Tools Needed for Inspection and Maintenance

(1) Head cleaning kit
(2) VTR oil kit
(3) Alcohol (or freon)
(4) Gauze
(5) Screwdriver for adjusting X-value

Table 3 Locations for Greasing and Oiling using the Kit

Name	Oil or Greasing Location
Sonic Slidas Oil (#1600)	Oil low-speed rotating sections
Froil (G31SAY)	Lubricate metal or molded sections under light load
Lock paint	Fix adjustment screws

The above oils and greases are in the kit prepared especially for VTR maintenance. Use this kit for lubrication.

5. Maintenance Procedures

5-1 Cleaning

(1) Cleaning video head

First use a cleaning tape. If dirt on head is too stubborn to remove by tape, use the cleaning kit. Moisten the cleaning stick with cleaning fluid at the point indicated. Touch the stick to the head tip and gently turn the head (rotating cylinder) to the right and left.
(Do not move the stick vertically and make sure that only the chamois leather on the stick comes into contact with the head. Otherwise, the head may be damaged.)
Thoroughly dry the head. Then test run a tape. If cleaning fluid remains on the video head, the tape may be damaged when it comes into contact with the head surface.

(2) Cleaning the tape transport system and drive system, etc.

Wipe with gauze moistened with alcohol or freon.

Notes:
1) The tape transport system is the system which comes into contact with the running tape. The drive system consists of those parts which run the tape.
2) Make sure that during cleaning you do not touch the tape transport system with the tip of a screwdriver and that no force is applied to the system that could deform it.

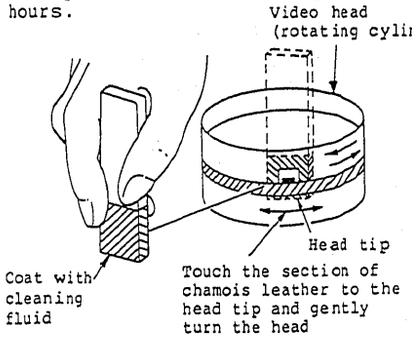
5-2 Lubrication

(1) Guidelines for lubricating with oil

Use the oiler to apply one or two drop of Sonic Slidas oil. Make sure not to use too much oil because it may spill over or leak out coming into contact with rotating parts and causing slippage or other problems. If too much oil is applied, wipe clean with alcohol or freon.

(2) Periodic oil lubrication

Oil specified locations every 1,000 hours.


Video head
(rotating cylinder)
Head tip
Coat with cleaning fluid
Touch the section of chamois leather to the head tip and gently turn the head

5-3 Greasing

(1) Greasing guidelines

Apply grease, Froil, with a stick or brush. Do not use excess grease. It may come into contact with the tape transport or drive system. Wipe any excess and clean with gauze moistened with alcohol or freon.

(2) Periodic greasing

Grease specified locations every 5,000 hours.

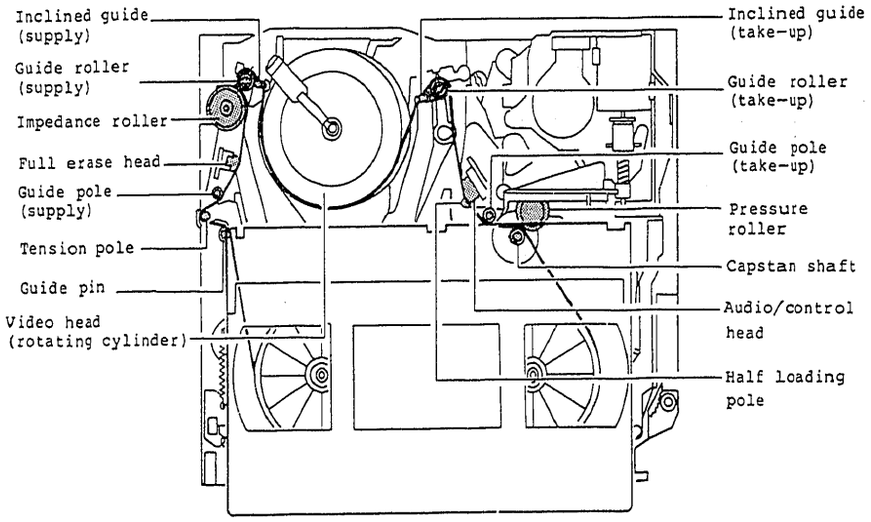


Fig. 1 Tape Transport System

6. Inspection Locations

Phenomenon	Inspection Location	Replacement	①	②	③	④	⑤
Color beats	Dirt on full erase head		○				
Poor S/N, no color	Dirt on video heads			○			
Vertical jitter	Dirt on video heads				○		
	Dirt in tape transport system				○		
Low volume, sound disordered	Dirt on audio/control head					○	
Tape does not run. Tape is slack.	Dirt on pressure roller						○

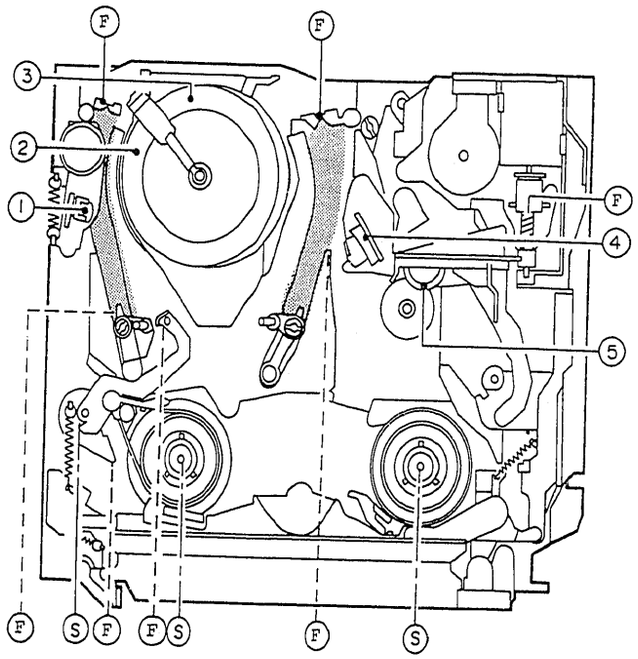


Fig. 2 Top View of Mechanism

Phenomenon	Inspection Location	Replacement
Does not fast fast forward or rewind, or rotation is slow	Dirt on reel belt	○
Tape does not run		
Slack tape		

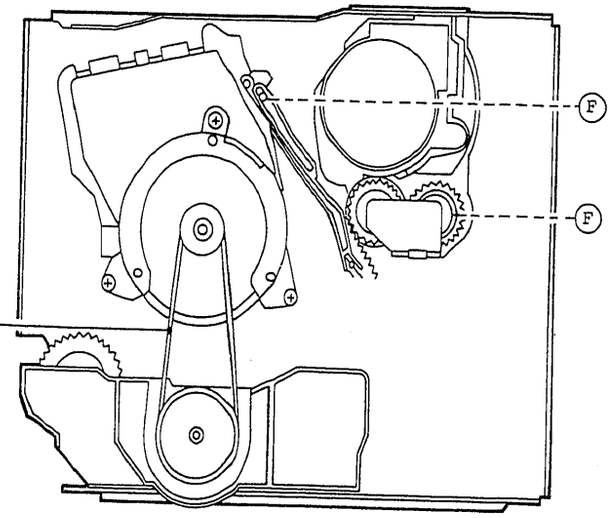


Fig. 3 Bottom View of Mechanism

Note:
If locations marked with "o" do not operate normally after cleaning, they are worn. Replace.
See the EXPLODED VIEWS at the end of this manual as well as the above illustrations for the sections to be lubricated and greased.

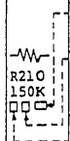
Ⓢ : Sonic Slidas oil (oil locations)
Ⓕ : Foil (grease locations)

SCHEMATIC/CIRCUIT BOARD DIAGRAMS

BEFORE USING THIS SERVICE REFERENCE MATERIAL

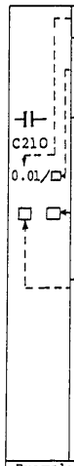
How to read abbreviations

(Resistors)



	Value	Not indicated .. Ω(ohm) K ..... kΩ
	Toler-ance	Not indicated .. ±5% K ..... ±10% M ..... ±20%
	Wattage	Not indicated .. 1/8W (All values other than 1/8W are indicated in the schematic diagrams with W omitted)
	Sort	Not indicated .. Carbon film RC ..... Carbon solid RW ..... Wire wound RS ..... Metal oxide film RN ..... Metal film
Example: R120 ..... 150kohm, carbon solid RC1/2K 1/2W, ±10%		

(Capacitors)



	Value	Not indicated .. μF P ..... PF
	Dielect-ric strength	Not indicated .. 50WV (All values other than 50WV and electrolytic capacitors are indicated in the schematic diagrams with WV omitted)
	Toler-ance	Not indicated .. ±10% J ..... ±5% M ..... ±20% C ..... ±0.25PF Z ..... +80% -20% (No tolerance is indicated for electrolytic capacitors (excluding tantalum and high stability electrolytic capacitors))
	Sort	Not indicated .. Ceramic General electrolytic (distinguished from ceramic with circuit symbol) MYL ..... Mylar (polyester film) STY ..... Styrol TA ..... Tantalum KU ..... High stability electrolytic MP ..... Metalized paper
Example: C210 0.01/25 ... Mylar, 0.01μF, 25WV, ±5% MYL J		

Notes:

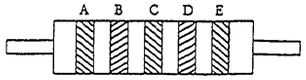
1. Voltages are measured with the negative ⊖ terminal of the power supply as reference in the normal operating mode. The voltages in different modes are indicated in the schematic diagrams; those in parentheses ( ) are in the record mode and those without parentheses are in the play mode.
2. The value, dielectric strength (wattage), tolerance and sort of resistors (excluding variable resistors, etc.) and capacitors are indicated in the schematic diagrams by abbreviations. Replace them correctly, comparing the abbreviations in the schematic diagrams and the table "how to read abbreviations".

Cautions on use of MOS IC

1. The MOS IC is inserted in black foam for shipment. This foam is a conductor which short-circuits between the leads to prevent damage. Do not remove ICs from this foam during their storage. Avoid removing ICs from this foam, placing them on plastic which is likely to be charged with static electricity or inserting them into styrol foam.
2. High voltages may be applied during soldering caused by leakages from the soldering iron, so be sure to ground the tip of the soldering iron or use a low voltage soldering iron.
3. The human body, clothes made of synthetic fibers or nylon gloves may be charged with several thousands volts of static electricity because of friction, so a worker should be grounded.
4. Be sure to ground measuring instruments such as oscilloscopes, VTVMs, etc. used for repairs.

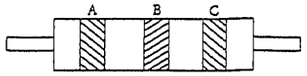
How to read capacity and inductance of resistor shape capacitors and coils

CAPACITOR



CAPACITY: (10A+B) x C (PF)
TOLERANCE: D
RATED VOLTAGE: BODY COLOR
PINK: 25V
GREEN: 50V
CHARACTERISTICS: E

COIL



INDUCTANCE: (10A+B) x C (μH)

COLOR	A,B	C	D	E
Black	0	10^0	±20%	For temperature compensation
Brown	1	10^1		
Red	2	10^2		
Orange	3	10^3		
Yellow	4	10^4		
Green	5	10^5		
Blue	6			
Violet	7			
Gray	8		±30%	High dielectric constant type
White	9			For temperature compensation
Gold		10^{-1}	±5%	
Silver		10^{-2}	±10%	High dielectric constant type

SERVICE MANUAL ABBREVIATION LIST

A	
A.DUBB	Audio Dub
ACC	Automatic Color Control
ACK	Automatic Color Killer
ADD	Adder
AFC	Automatic Frequency Control
AGC	Automatic Gain Control
ALC	Automatic Level Control
ASBL	Assemble (Phase Matching)
APC	Automatic Phase Control
AUX	Auxiliary
B	
BATT.	Battery
BG	Burst Gate
BGP	Burst Gate Pulse
BH	Power Supply for Selecting VHF High Band
BL	Power Supply for Selecting VHF Low Band
BPF	Band-pass Filter
BS	Power Supply for Selecting VHF Super Band
BU	Power Supply for Selecting UHF Band
BUF.	Buffer Amplifier
C	
C	Chroma
C.FG/CFG	Capstan Frequency Generator
C.MEMORY	Counter Memory
C.PAUSE	Camera Pause
C.RESET	Counter Reset
C.REVERSE	Count Reverse
C.SYNC	Composite Synchronizing Signal
C/R	Capacitor/Resistor
CATV	Cable TV
CAPST.	Capstan
CCD	Charge Coupled Device
CH	Channel
CHAR.	Character
COM.	Common
COMP-EXP	Compressor-Expander
COMP.	Comparator
COMPE	Compensator
COM.	Composite
COUNT.	Counter
CST	Cassette
CTL	Control Track Pulse
CYL.	Cylinder
D	
D/A	Digital to Analog
DEEMPH.	Deemphasis
DEMOD.	Demodulator
DET	Detector
DISP	Display
DL	Delay line
DN	Down
DO	Dropout
DOC	Dropout Compensator
E	
E-E	Electronic-to-Electronic
EA-ROM	Electrically Alterable Read Only Memory
EMPH	Emphasis
EQ	Equalizer
EXT.	External
F	
FF	Flip Flop
F.FWD	Fast Forward
FG	Frequency Generator
FM	Frequency Modulation
FRAME ADV./F.ADV	Frame Advance
fsc	Sub Carrier Frequency
FWD	Forward
G	
GEN	Generator
GND	Ground
H	
HD	Horizontal Drive
Hi-Fi	High Fidelity
HPF	High-pass Filter
HPL	High-pass Limiter
HSS	Horizontal Sync. Separator
I	
I/O	In/Out
IF	Intermediate Frequency
INDI.	Indicator
INT.	Internal
INV.	Inverter
IR	Infrared Rays
IRT	Instant Recording Timer
L	
LCD	Liquid Crystal Display

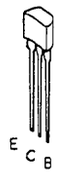
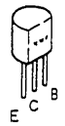
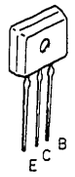
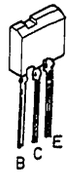
LIN.	Linear
LM	Loading Motor
LOG.	Logarithm
LPF	Low-pass Filter
L/R	Left/Right
LP	Long Play
M	
M.CUT	Monitor Cut
M.STATE	Mechanism State
M.STOP	Memory Stop
MEM.	Memory
MIX	Mixer
MM	Monostable Multivibrator
MOD.	Modulator
MPX	Multiplex
N	
NF	Negative Feed Back
NORM.	Normal
NR	Noise Reduction
O	
OSC	Oscillator
OSD	On-Screen Display
P	
PB/PLAY	Playback
PIF	Picture Intermediate Frequency
PLL	Phase Locked Loop
POS.	Positive
POWER CONT.	Power Control
PROG.	Programme
PROTECT.	Protector
PWM	Pulse Width Modulation
R	
REC	Record
RECT.	Rectifier
REF	Reference
REG	Regulator
REV	Reverse
REW	Rewind
RF	Radio Frequency
RAM	Random Access Memory
ROM	Read Only Memory
S	
S/H	Sample and Hole
S.REEL	Supply Reel Sensor
S.TRACK.	Slow Tracking
S-VHS	Super VHS

SAW	Sawtooth
SEP.	Separator
SIF	Sound Intermediate Frequency
SP	Standard Play
SRCH	Search
SRV	Servo
SW 30Hz	Head Switching Pulse
SYNC	Synchronizing Signal
SYS.CON	System Control
T	
T/L	Tuner/Line
T.BRAKE	Take-up Brake
TμP	Timer Microprocessor
T.REEL	Take-up Reel Sensor
T.RESET	Timer Reset
TP	Test Point
TRS	Transfer
TU-μP	Tuning Microprocessor
U	
U/D	Up/Down
UNI.	Unified
V	
V-REF	Voltage Reference
V.DRV	Vertical Drive Pulse
V.DUB	Video Dub
VCO	Voltage Controlled Oscillator
VHS	Video Home Systems
Vss	Voltage Super Source
VOL.	Volume
VSS	Vertical Sync. Separator
VT	Tuning Voltage
VT-U	Tuning Voltage-UHF
VT-V	Tuning Voltage-VHF
Y	
Y/C	Luminance/Chrominance

SEMICONDUCTOR CONFIGURATION

When replacing a semiconductor, take care of its pin numbers and makings (recess, paint) so as not to insert it in reverse.

TRANSISTOR

1	2	3	4
			
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IC (SINGLE INLINE PACKAGE)

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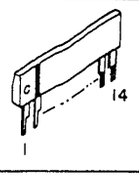	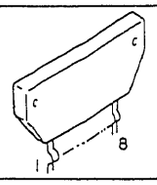
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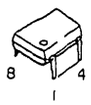	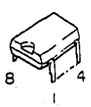	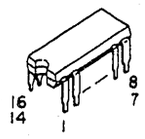	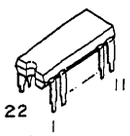	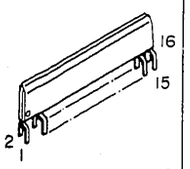
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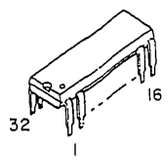	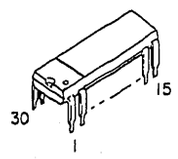	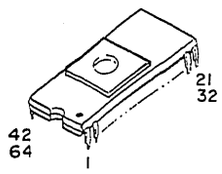	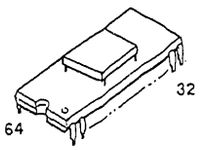
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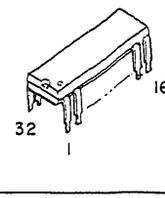	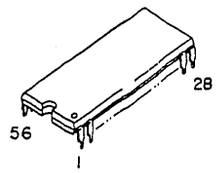	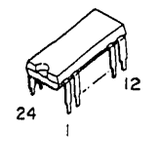	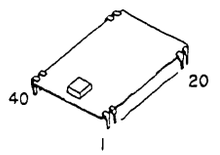
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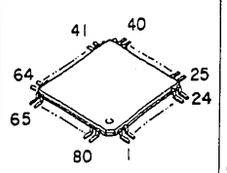	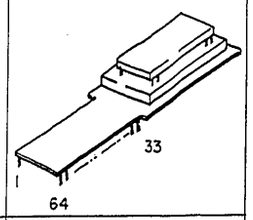
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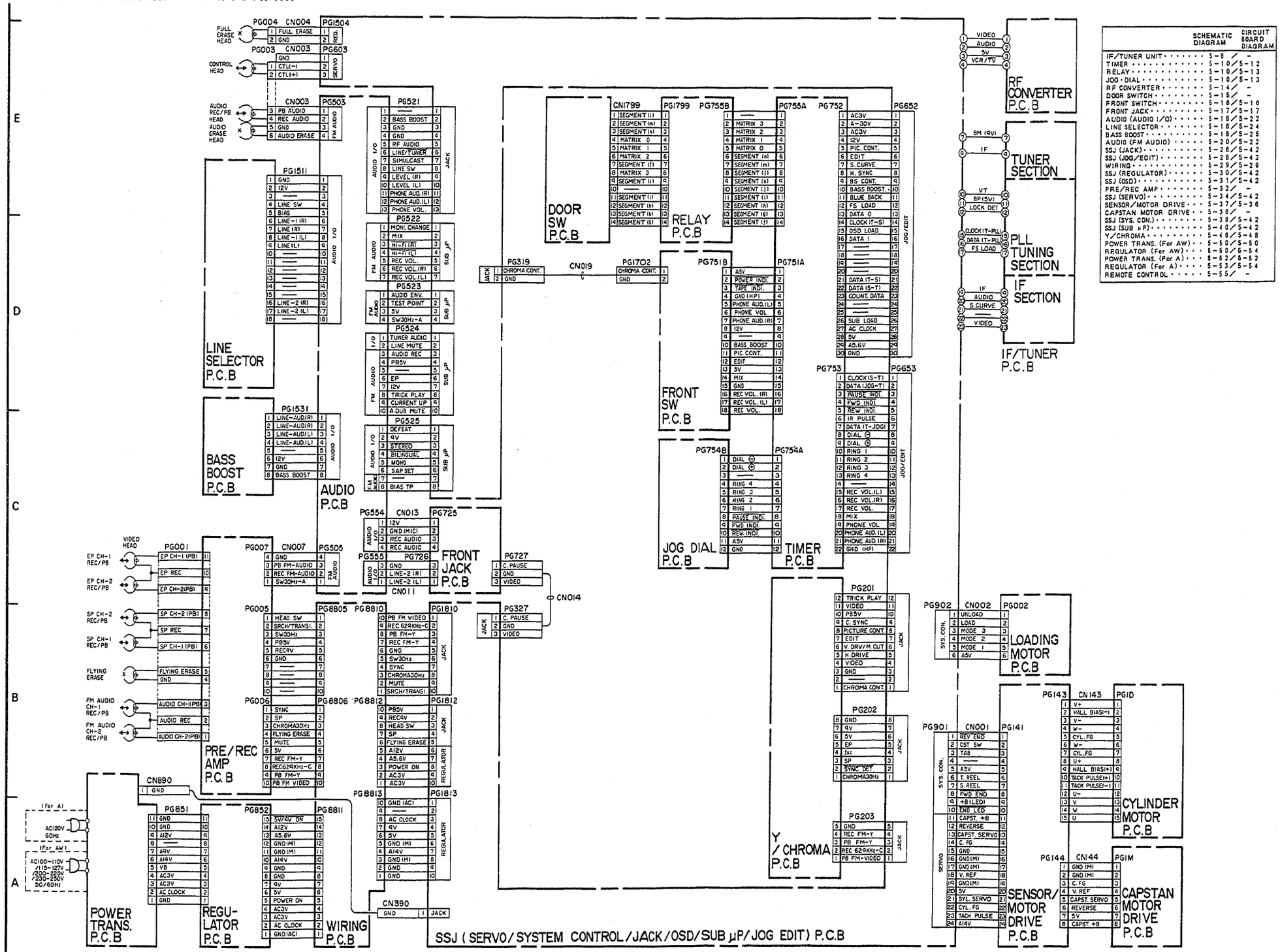
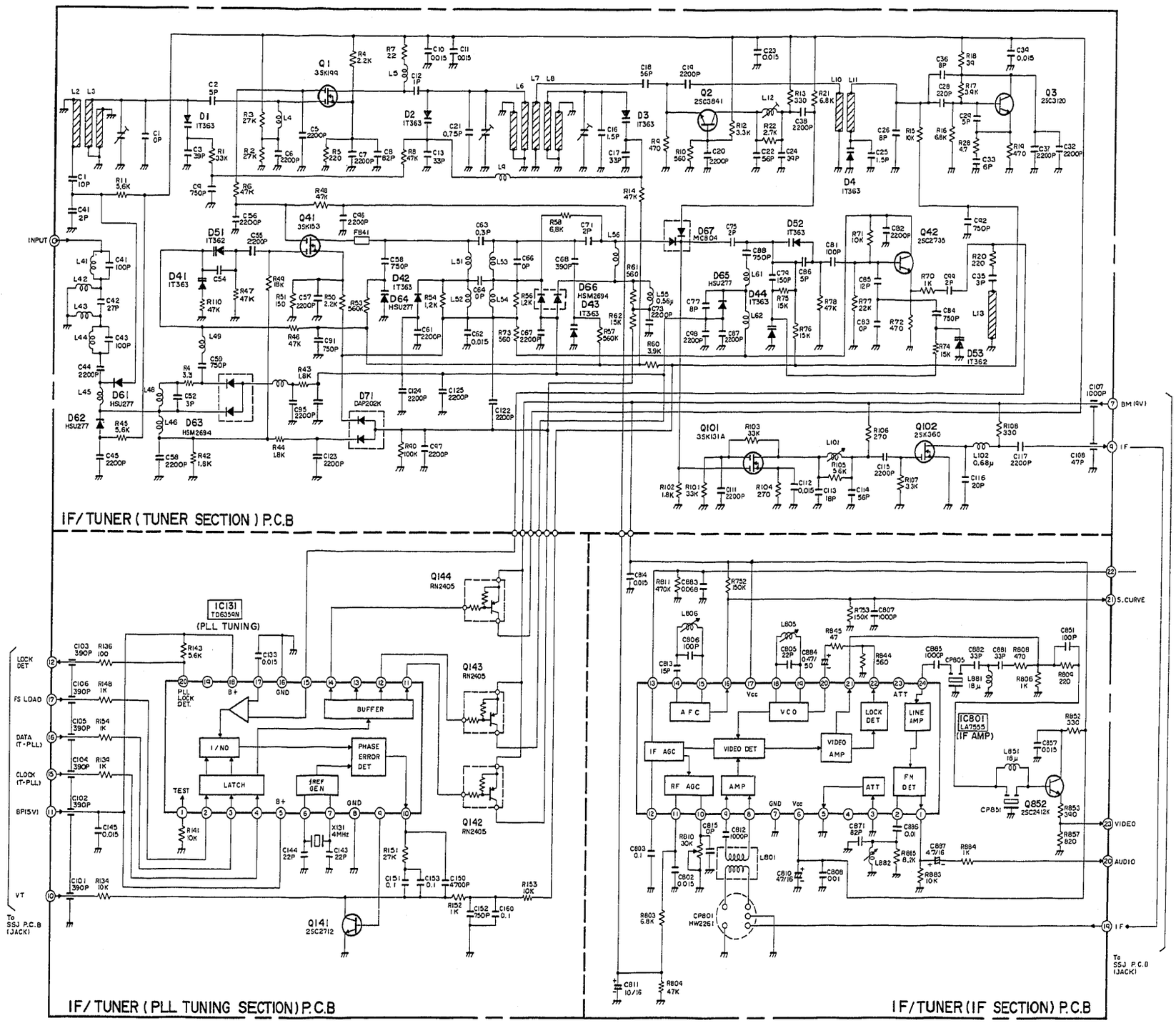
INTERNAL WIRING DIAGRAM



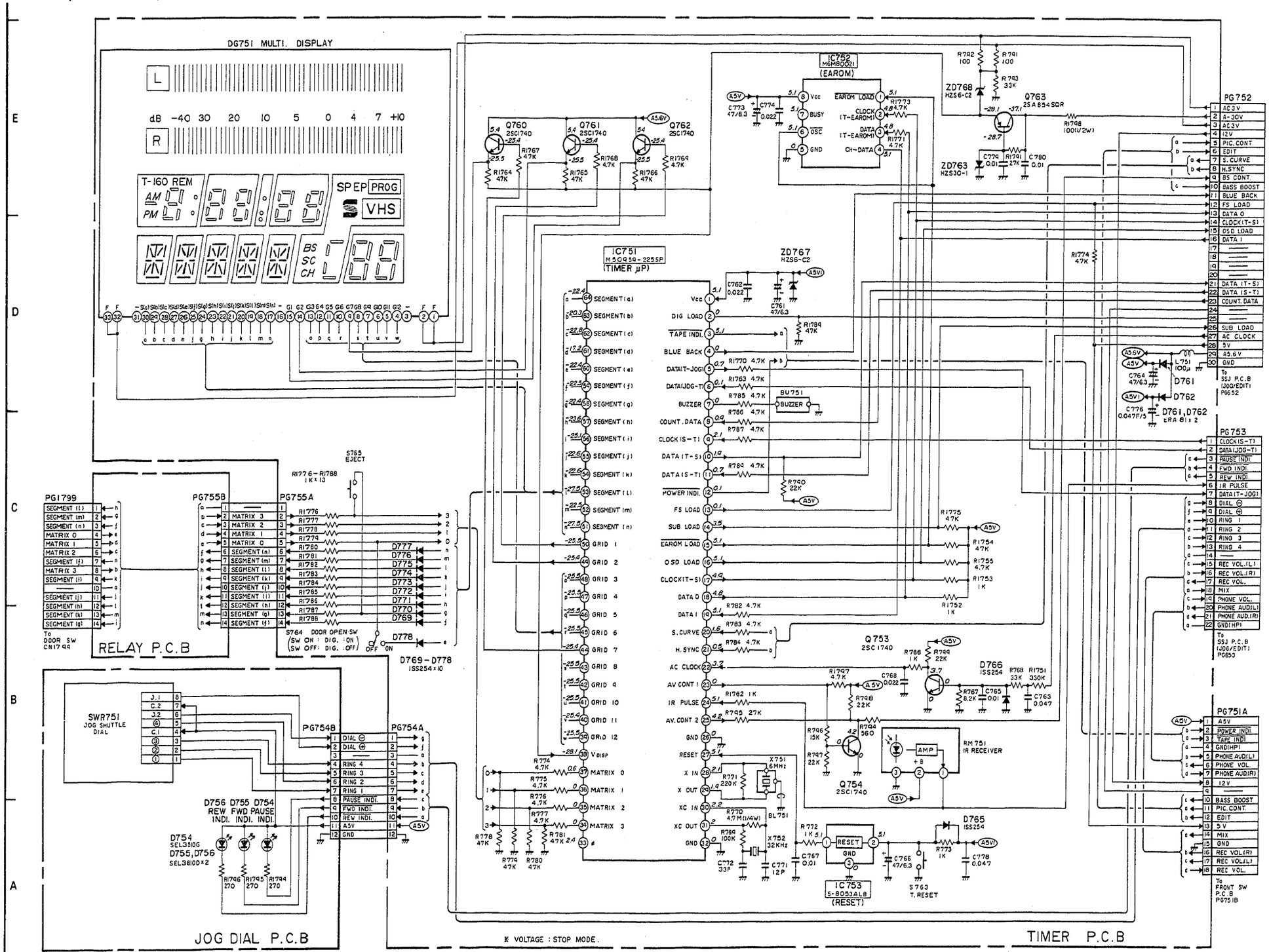
	SCHEMATIC DIAGRAM	CIRCUIT BOARD DIAGRAM
IF/TUNER UNIT	5-8	/ -
TIMER	5-10	/ 5-12
RELAY	5-10	/ 5-13
JOG·DIAL	5-10	/ 5-13
RF CONVERTER	5-14	/ -
DOOR SWITCH	5-15	/ -
FRONT SWITCH	5-16	/ 5-16
FRONT JACK	5-17	/ 5-17
AUDIO (AUDIO I/O)	5-18	/ 5-22
LINE SELECTOR	5-18	/ 5-24
BASS BOOST	5-18	/ 5-25
AUDIO (FM AUDIO)	5-20	/ 5-22
SSJ (JACK)	5-26	/ 5-42
SSJ (JOG/EDIT)	5-28	/ 5-42
WIRING	5-29	/ 5-29
SSJ (REGULATOR)	5-30	/ 5-42
SSJ (OSD)	5-31	/ 5-42
PRE/REC AMP	5-32	/ -
SSJ (SERVO)	5-34	/ 5-42
SENSOR/MOTOR DRIVE	5-37	/ 5-38
CAPSTAN MOTOR DRIVE	5-36	/ -
SSJ (SYS. CON.)	5-38	/ 5-42
SSJ (SUB µP)	5-40	/ 5-42
Y/CHROMA	5-46	/ 5-48
POWER TRANS. (For AW)	5-50	/ 5-50
REGULATOR (For AW)	5-50	/ 5-54
POWER TRANS. (For A)	5-52	/ 5-52
REGULATOR (For A)	5-53	/ 5-54
REMOTE CONTROL	5-55	/ -

IF/TUNER UNIT SCHEMATIC DIAGRAM

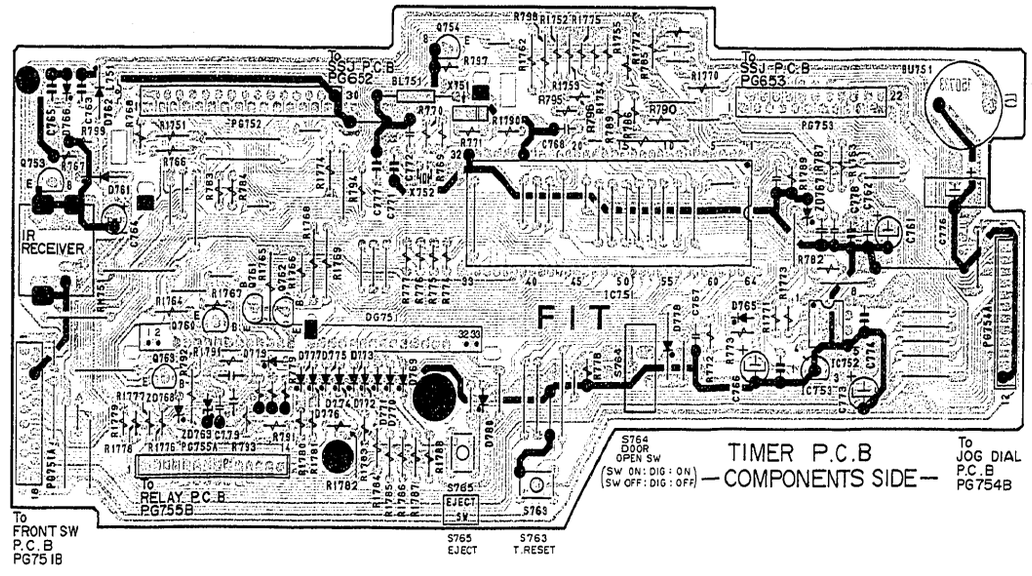


IF/TUNER 5 – 8 5 – 9 IF/TUNER

TIMER/RELAY/JOG • DIAL SCHEMATIC DIAGRAM

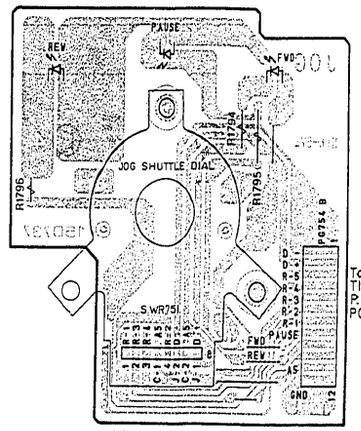


TIMER CIRCUIT BOARD —COMPONENTS SIDE—



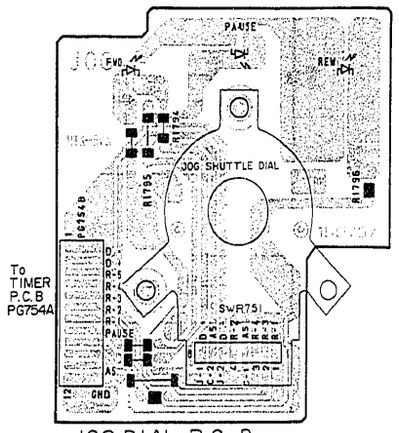
TIMER P.C.B —COMPONENTS SIDE—

JOG•DIAL CIRCUIT BOARD —COMPONENTS SIDE—



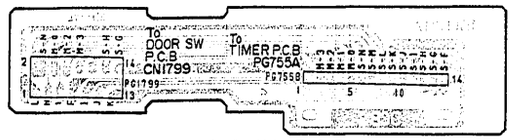
JOG•DIAL P.C.B —COMPONENTS SIDE—

JOG•DIAL CIRCUIT BOARD —SOLDER SIDE—



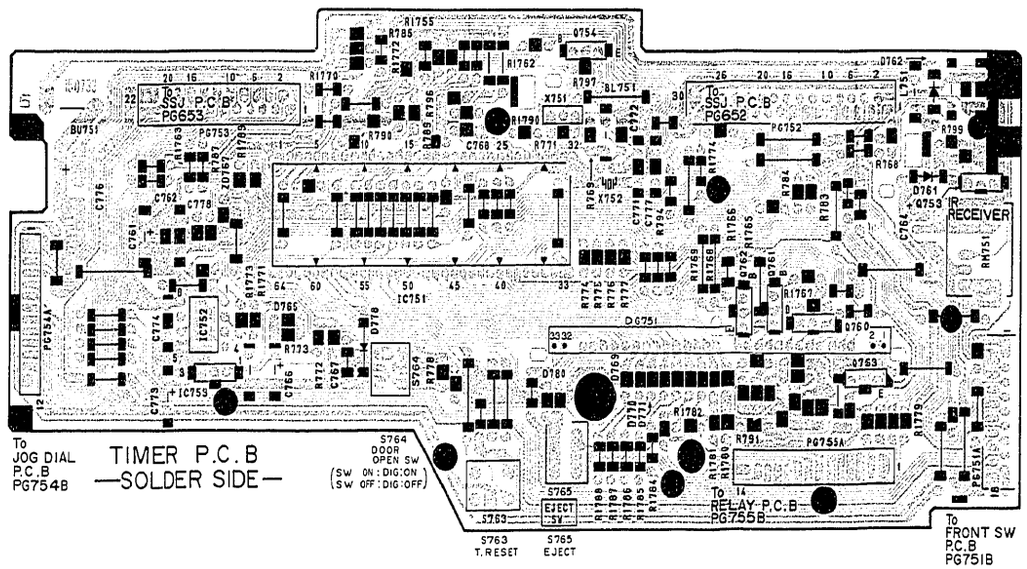
JOG•DIAL P.C.B —SOLDER SIDE—

RELAY CIRCUIT BOARD —COMPONENTS SIDE—



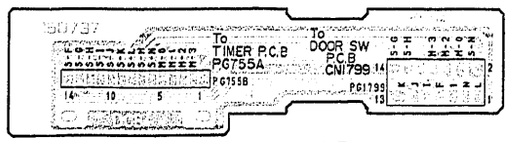
RELAY P.C.B —COMPONENTS SIDE—

TIMER CIRCUIT BOARD —SOLDER SIDE—


To SSJ P.C.B PG653
To SSJ P.C.B PG652
IC751
DG751
IR RECEIVER
To JOG DIAL P.C.B PG754B
S764 DOOR OPEN SW (SW ON : DIG : ON) (SW OFF : DIG : OFF)
S765 EJECT
S763 T.RESET
To RELAY P.C.B PG755B
To FRONT SW P.C.B PG751B

TIMER P.C.B —SOLDER SIDE—

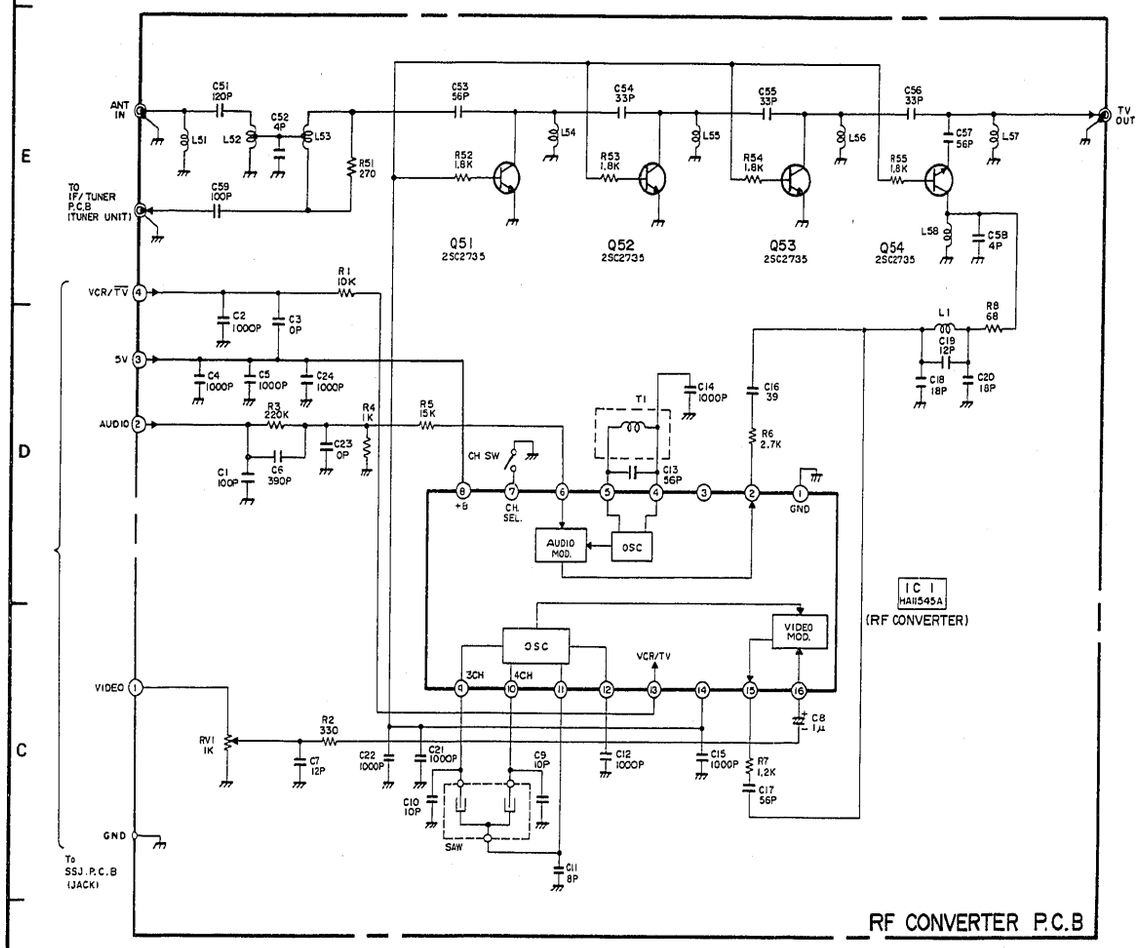
RELAY CIRCUIT BOARD —SOLDER SIDE—



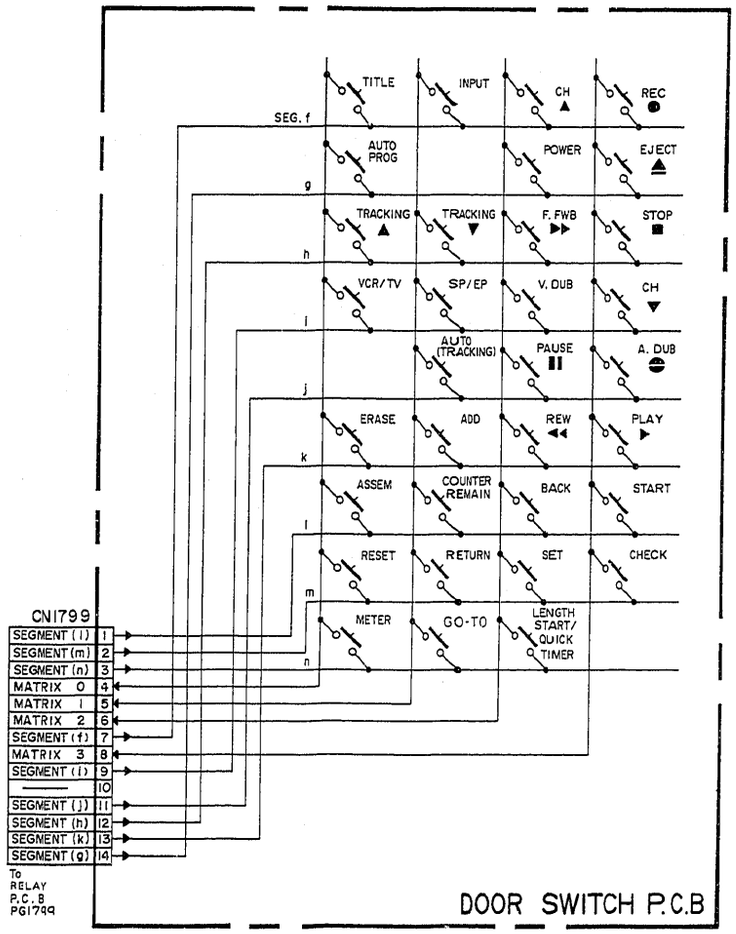
RELAY P.C.B —SOLDER SIDE—

	SCHEMATIC DIAGRAM	CIRCUIT BOARD DIAGRAM
IF/TUNER UNIT	5-8	—
TIMER	5-10	5-12
RELAY	5-10	5-13
JOG・DIAL	5-10	5-13
R.F CONVERTER	5-14	—
DOOR SWITCH	5-15	—
FRONT SWITCH	5-16	5-16
FRONT JACK	5-17	5-17
AUDIO (AUDIO I/O)	5-18	5-22
LINE SELECTOR	5-18	5-24
BASS BOOST	5-18	5-25
AUDIO (FM AUDIO)	5-20	5-22
SSJ (JACK)	5-26	5-42
SSJ (JOG/EDIT)	5-28	5-42
WIRING	5-29	5-29
SSJ (REGULATOR)	5-30	5-42
SSJ (OSD)	5-31	5-42
PRE/REC AMP	5-32	—
SSJ (SERVO)	5-34	5-42
SENSOR/MOTOR DRIVE	5-37	5-38
CAPSTAN MOTOR DRIVE	5-36	—
SSJ (SYS. CON.)	5-38	5-42
SSJ (SUB μP)	5-40	5-42
Y/CHROMA	5-46	5-48
POWER TRANS. (For AW)	5-50	5-50
REGULATOR (For AW)	5-50	5-54
POWER TRANS. (For A)	5-52	5-52
REGULATOR (For A)	5-53	5-54
REMOTE CONTROL	5-55	—

RF CONVERTER SCHEMATIC DIAGRAM

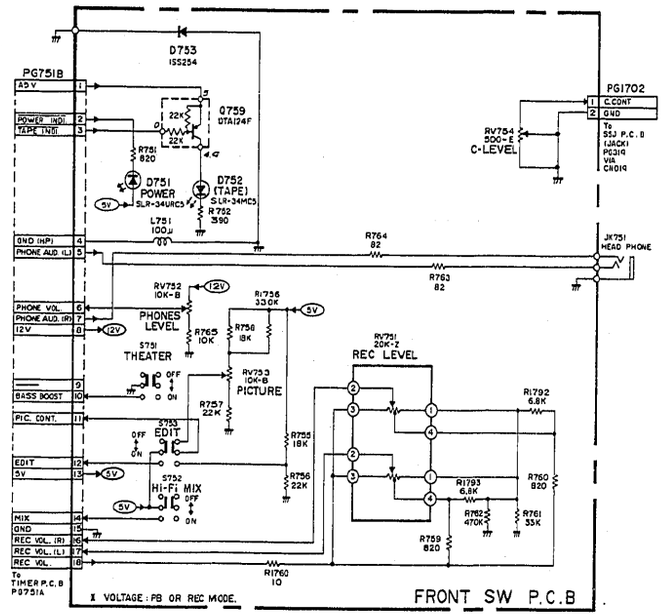


DOOR SWITCH SCHEMATIC DIAGRAM



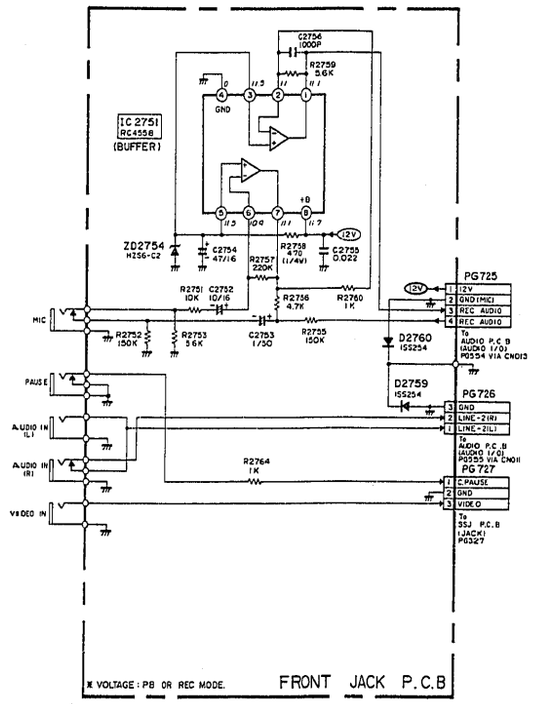
	SCHEMATIC DIAGRAM	CIRCUIT BOARD DIAGRAM
IF/TUNER UNIT	5-8	-
TIMER	5-10	5-12
RELAY	5-10	5-13
JOG・DIAL	5-10	5-13
RF CONVERTER	5-14	-
DOOR SWITCH	5-15	-
FRONT SWITCH	5-16	5-16
FRONT JACK	5-17	5-17
AUDIO (AUDIO I/O)	5-18	5-22
LINE SELECTOR	5-18	5-24
BASS BOOST	5-18	5-25
AUDIO (FM AUDIO)	5-20	5-22
SSJ (JACK)	5-26	5-42
SSJ (JOG/EDIT)	5-28	5-42
WIRING	5-28	5-29
SSJ (REGULATOR)	5-30	5-42
SSJ (OSD)	5-31	5-42
PRE/REC AMP	5-32	-
SSJ (SERVO)	5-34	5-42
SENSOR/MOTOR DRIVE	5-37	5-36
CAPSTAN MOTOR DRIVE	5-38	-
SSJ (SYS. CON.)	5-38	5-42
SSJ (SUB μP)	5-40	5-42
Y/CHROMA	5-46	5-48
POWER TRANS. (For AW)	5-50	5-50
REGULATOR (For AW)	5-50	5-54
POWER TRANS. (For A)	5-52	5-52
REGULATOR (For A)	5-53	5-54
REMOTE CONTROL	5-55	-

FRONT SWITCH SCHEMATIC DIAGRAM

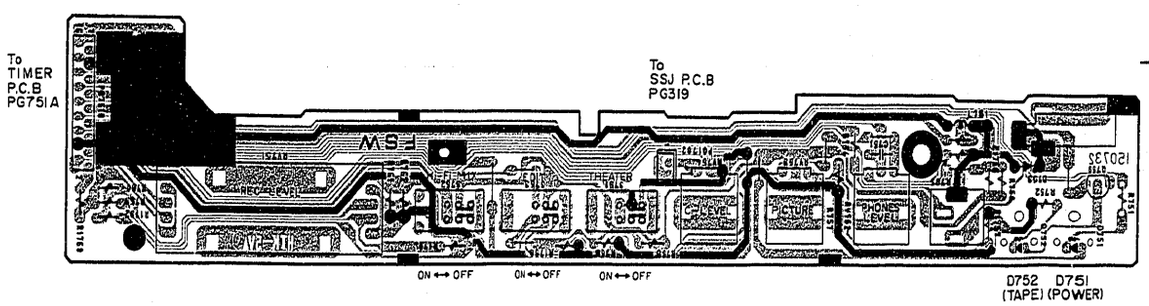


	SCHEMATIC DIAGRAM	CIRCUIT BOARD DIAGRAM
IF/TUNER UNIT	5-6	/ –
TIMER	5-10	5-12
RELAY	5-10	5-13
JOG · DIAL	5-10	5-13
RF CONVERTER	5-14	/ –
DOOR SWITCH	5-16	/ –
FRONT SWITCH	5-16	5-16
FRONT JACK	5-17	5-17
AUDIO (AUDIO I/O)	5-18	5-22
LINE SELECTOR	5-18	5-24
BASS BOOST	5-18	5-25
AUDIO (FM AUDIO)	5-20	5-22
SSJ (JACK)	5-26	5-42
SSJ (JOG/EDIT)	5-28	5-42
WIRING	5-29	5-29
SSJ (REGULATOR)	5-30	5-42
SSJ (OSD)	5-31	5-42
PRE/REC AMP	5-32	/ –
SSJ (SERVO)	5-34	5-42
SENSOR/MOTOR DRIVE	5-37	5-36
CAPSTAN MOTOR DRIVE	5-38	/ –
SSJ (SYS. CON.)	5-38	5-42
SSJ (SUB μP)	5-40	5-42
Y/CHROMA	5-46	5-48
POWER TRANS. (For AW)	5-50	5-50
REGULATOR (For AW)	5-50	5-54
POWER TRANS. (For A)	5-52	5-52
REGULATOR (For A)	5-53	5-54
REMOTE CONTROL	5-55	/ –

FRONT JACK SCHEMATIC DIAGRAM

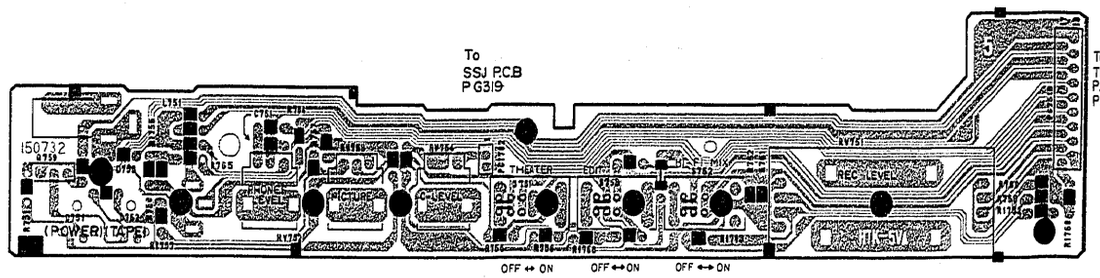


FRONT SWITCH CIRCUIT BOARD –COMPONENTS SIDE–



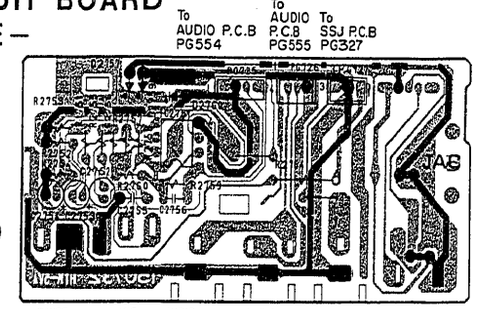
FRONT SWITCH P.C.B
–COMPONENTS SIDE–

FRONT SWITCH CIRCUIT BOARD –SOLDER SIDE–



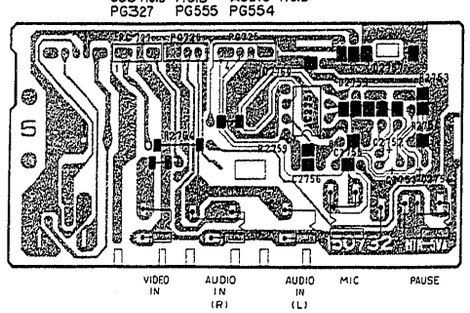
FRONT SWITCH P.C.B
–SOLDER SIDE–

FRONT JACK CIRCUIT BOARD –COMPONENTS SIDE–



FRONT JACK P.C.B
–COMPONENTS SIDE–

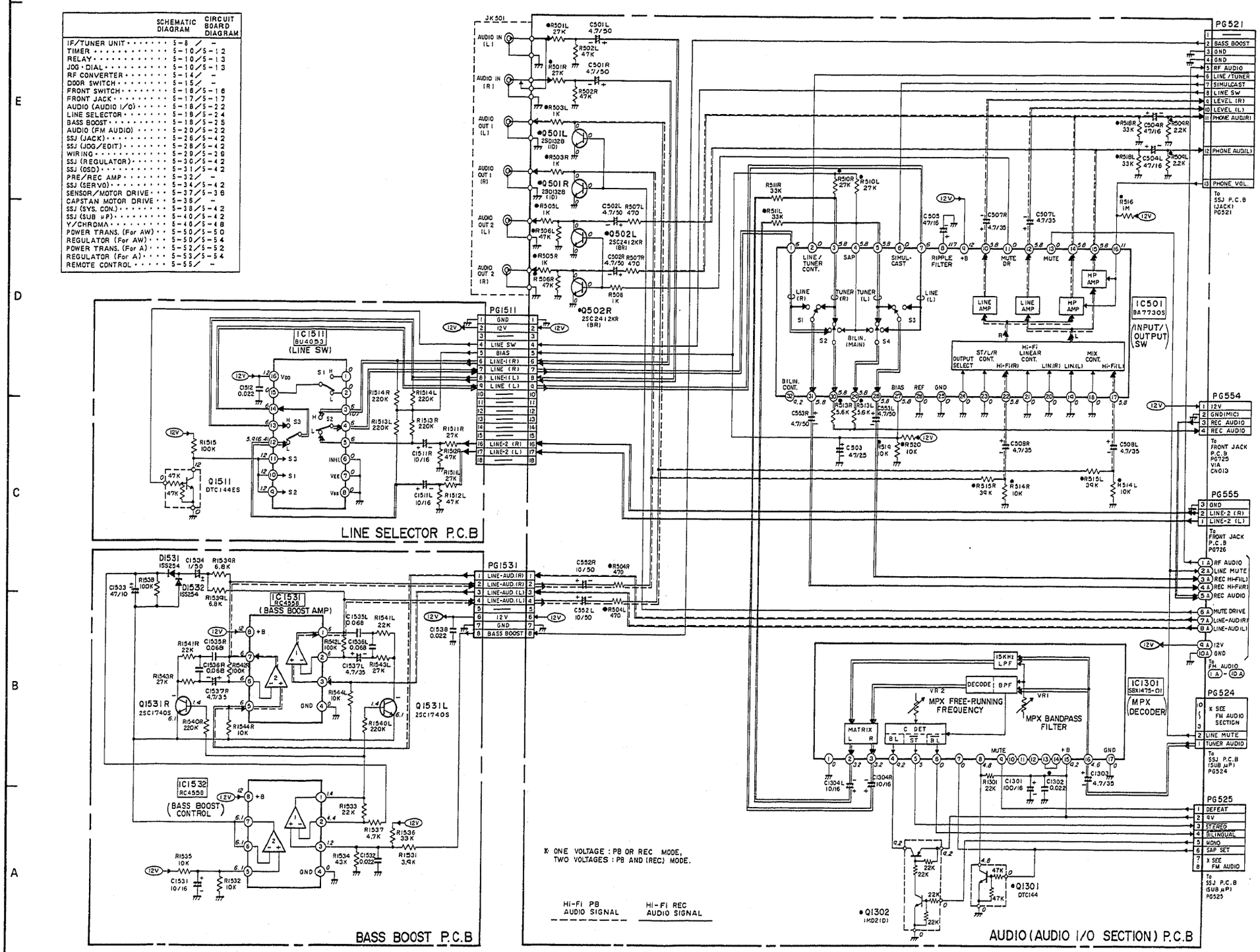
FRONT JACK CIRCUIT BOARD –SOLDER SIDE–



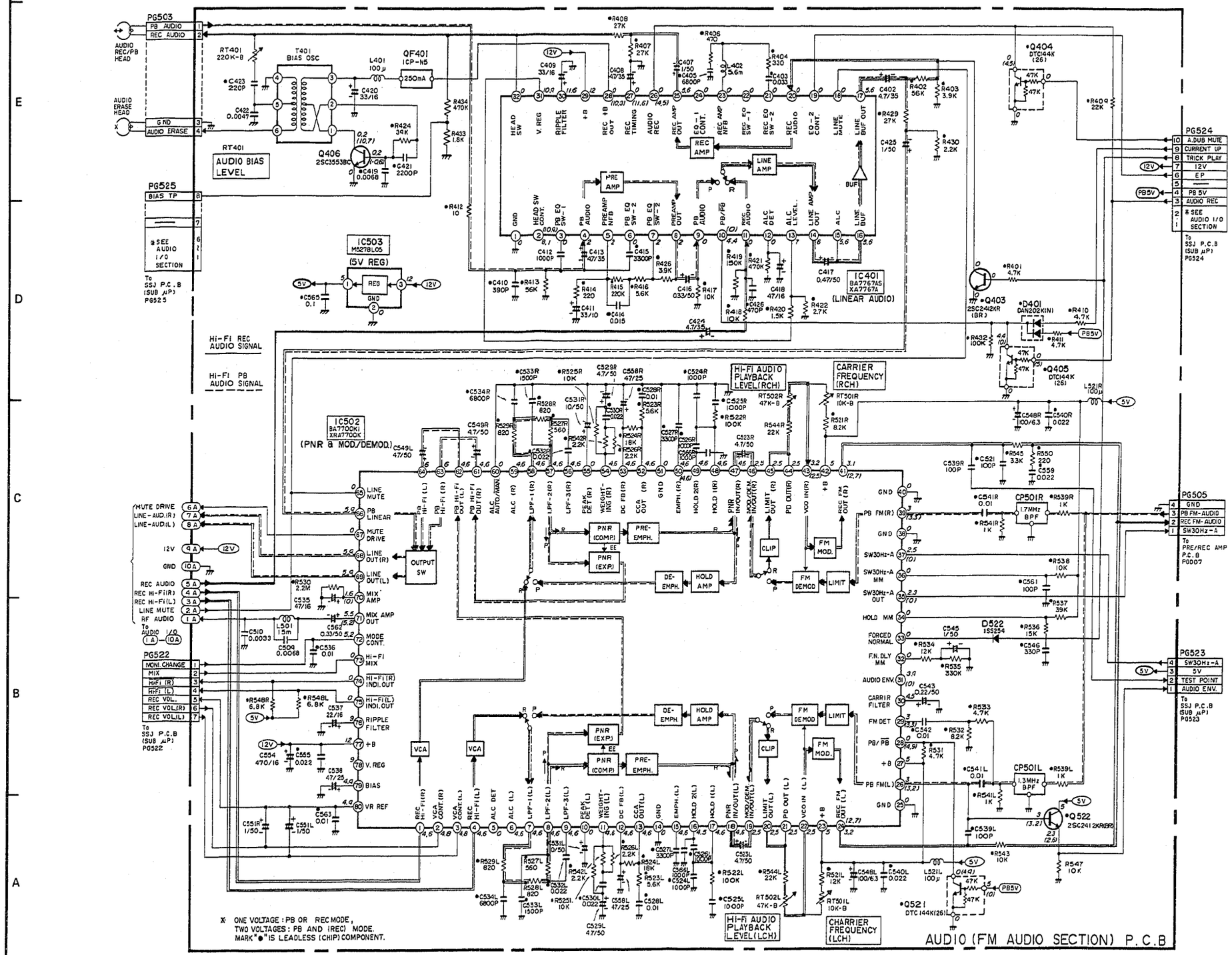
FRONT JACK P.C.B
–SOLDER SIDE–

AUDIO (AUDIO I/O)/LINE SELECTOR/BASS BOOST SCHEMATIC DIAGRAM

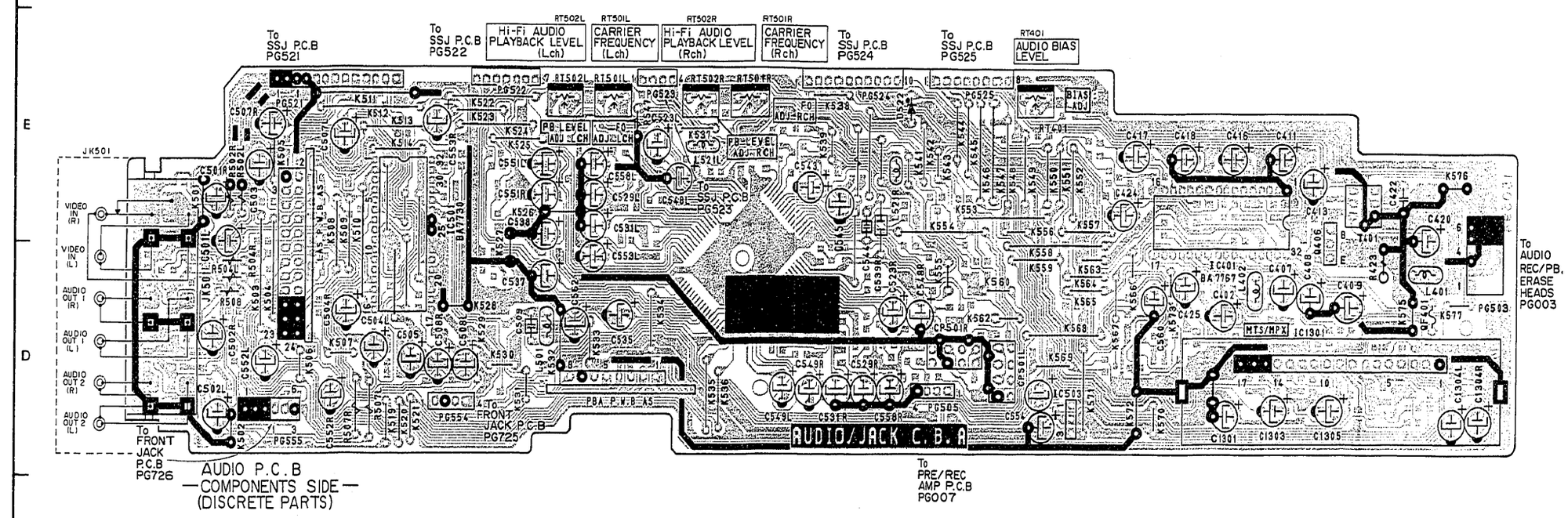
	SCHEMATIC DIAGRAM	CIRCUIT BOARD DIAGRAM
IF/TUNER UNIT	5-8	–
TIMER	5-10	5-12
RELAY	5-10	5-13
JOG·DIAL	5-10	5-13
RF CONVERTER	5-14	–
DOOR SWITCH	5-15	–
FRONT SWITCH	5-16	5-16
FRONT JACK	5-17	5-17
AUDIO (AUDIO I/O)	5-18	5-22
LINE SELECTOR	5-18	5-24
BASS BOOST	5-18	5-25
AUDIO (FM AUDIO)	5-20	5-22
SSJ (JACK)	5-26	5-42
SSJ (JOG/EDIT)	5-28	5-42
WIRING	5-29	5-26
SSJ (REGULATOR)	5-30	5-42
SSJ (OSD)	5-31	5-42
PRE/REC AMP	5-32	–
SSJ (SERVO)	5-34	5-42
SENSOR/MOTOR DRIVE	5-37	5-36
CAPSTAN MOTOR DRIVE	5-36	–
SSJ (SYS. CON.)	5-38	5-42
SSJ (SUB µP)	5-40	5-42
Y/CHROMA	5-40	5-48
POWER TRANS. (For AW)	5-50	5-50
REGULATOR (For AW)	5-50	5-54
POWER TRANS. (For A)	5-52	5-52
REGULATOR (For A)	5-53	5-54
REMOTE CONTROL	5-55	–



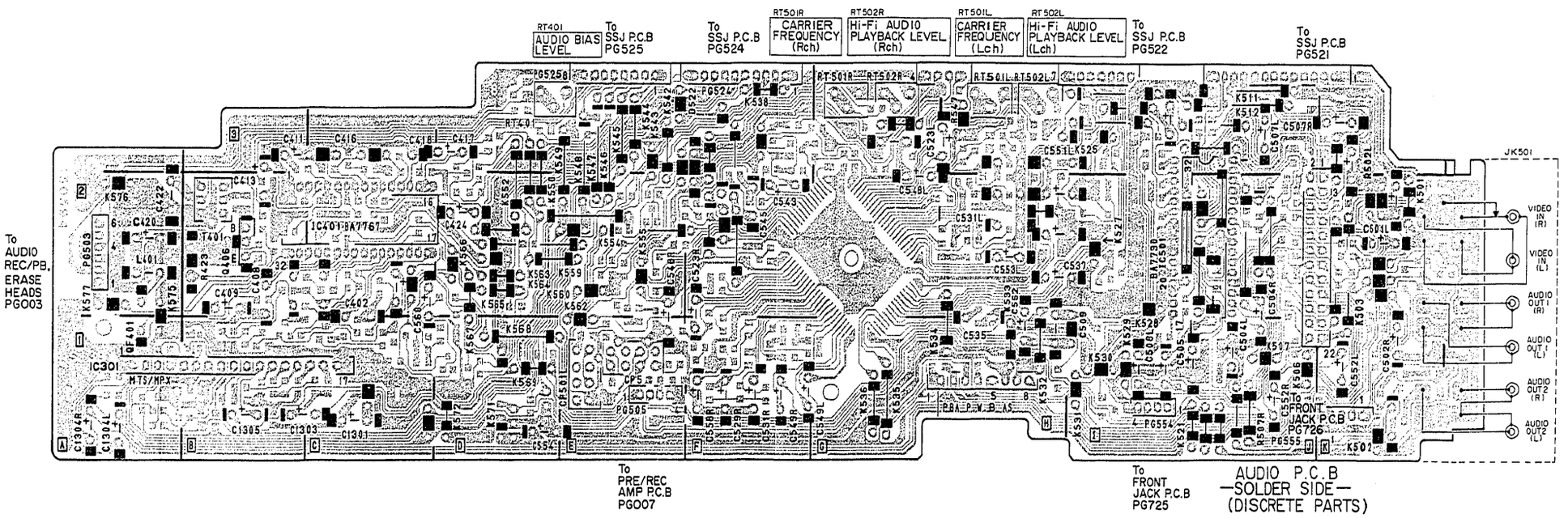
AUDIO (FM AUDIO) SCHEMATIC DIAGRAM



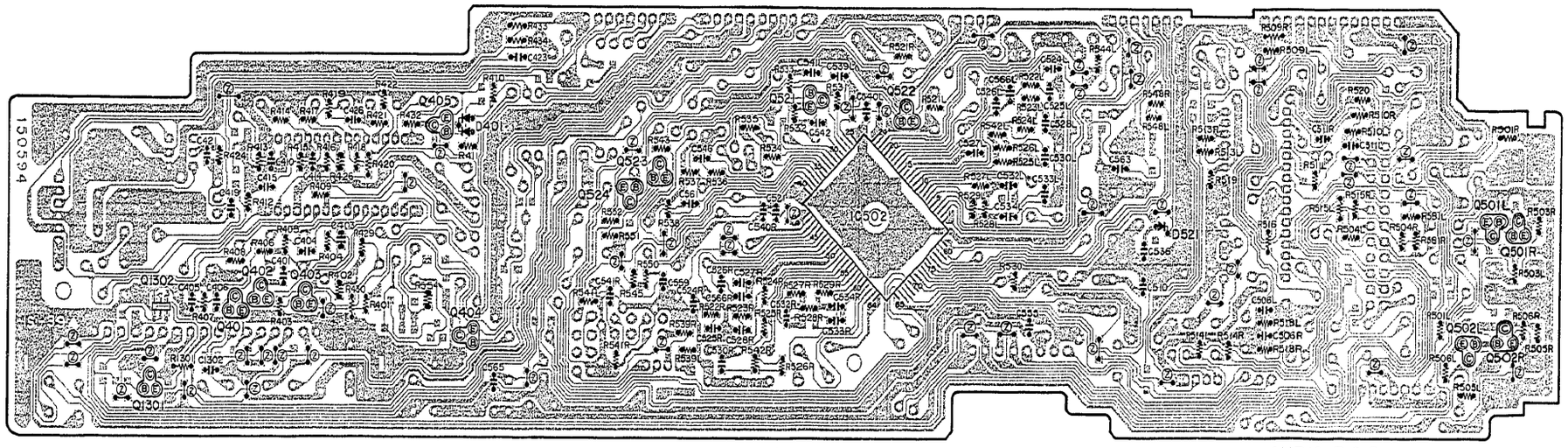
AUDIO CIRCUIT BOARD —COMPONENTS SIDE(DISCRETE PARTS)—



AUDIO CIRCUIT BOARD —SOLDER SIDE(DISCRETE PARTS)—



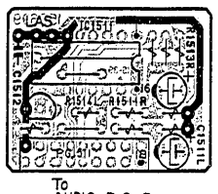
AUDIO CIRCUIT BOARD –SOLDER SIDE(CHIP PARTS)–



NOTE: MARK "Ⓙ" IS LEADLESS(CHIP) JUMPER.

AUDIO P.C.B
—SOLDER SIDE—
(CHIP PARTS)

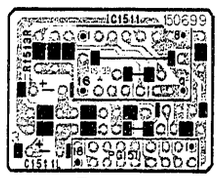
LINE SELECTOR CIRCUIT BOARD
–COMPONENTS SIDE–



To
AUDIO P.C.B
PG1511

LINE SELECTOR P.C.B
— COMPONENTS SIDE –

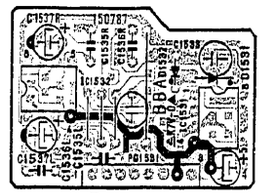
LINE SELECTOR CIRCUIT BOARD
–SOLDER SIDE–



To
AUDIO P.C.B
PG1511

LINE SELECTOR P.C.B
—SOLDER SIDE—

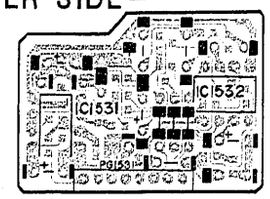
BASS BOOST CIRCUIT BOARD
–COMPONENTS SIDE–



To
AUDIO P.C.B
PG1531

BASS BOOST P.C.B
—COMPONENTS SIDE–

BASS BOOST CIRCUIT BOARD
–SOLDER SIDE–

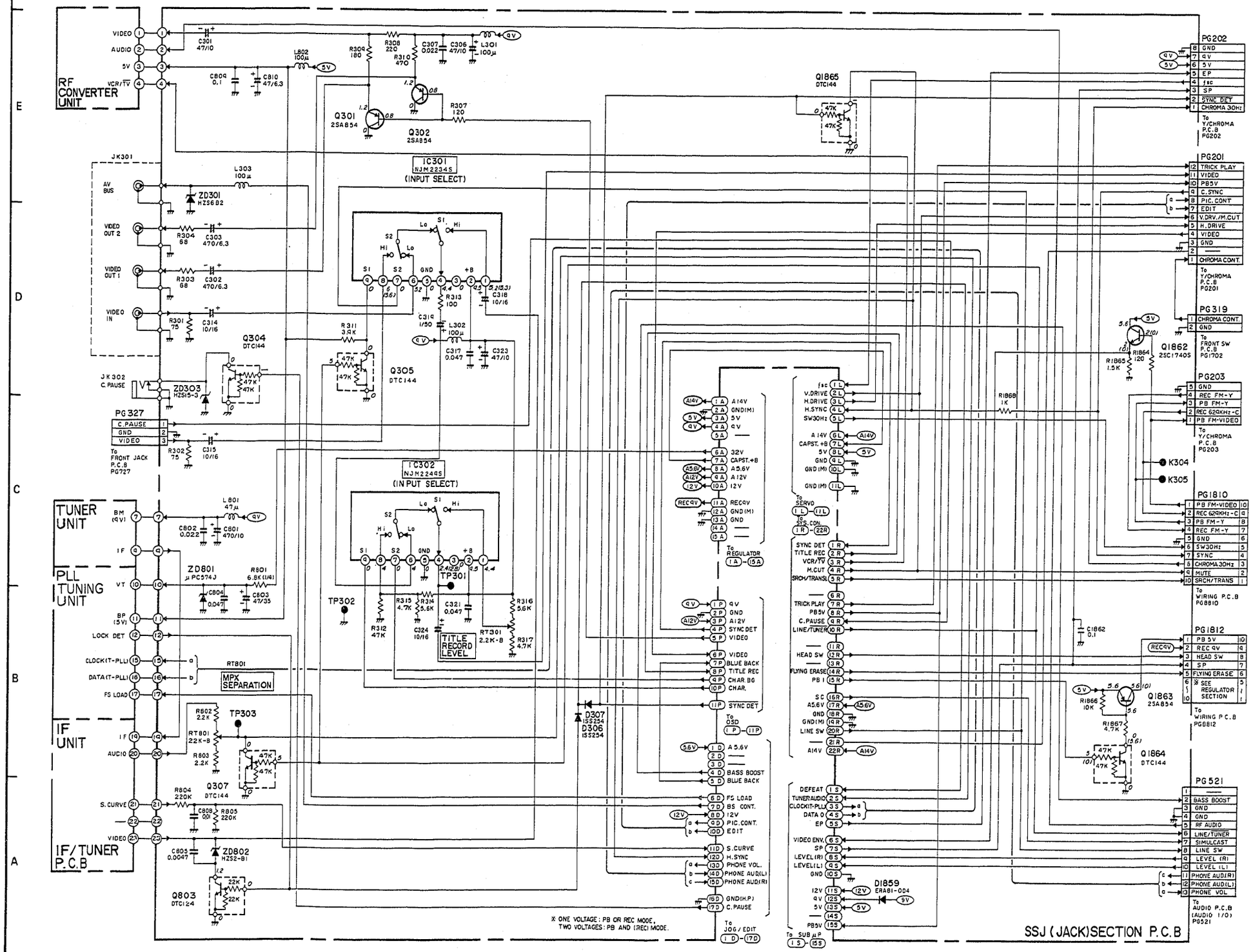


To
AUDIO P.C.B
PG1531

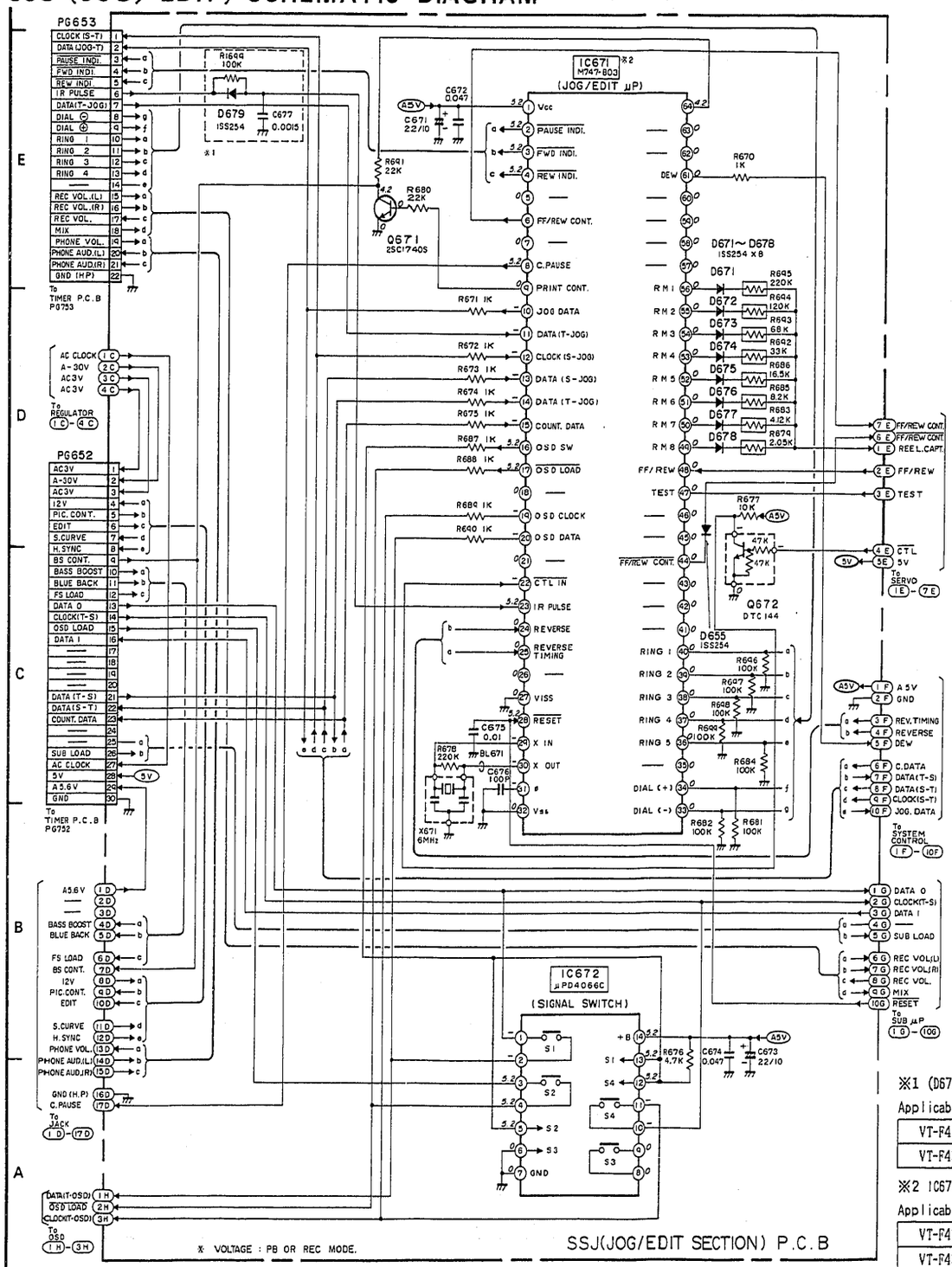
BASS BOOST P.C.B
—SOLDER SIDE—

	SCHEMATIC DIAGRAM	CIRCUIT BOARD DIAGRAM
IF/TUNER UNIT	5–8	/ –
TIMER	5–10	/5–12
RELAY	5–10	/5–13
JOG·DIAL	5–10	/5–13
RF CONVERTER	5–14	/ –
DOOR SWITCH	5–15	/ –
FRONT SWITCH	5–16	/5–16
FRONT JACK	5–17	/5–17
AUDIO (AUDIO I/O)	5–18	/5–22
LINE SELECTOR	5–18	/5–24
BASS BOOST	5–18	/5–25
AUDIO (FM AUDIO)	5–20	/5–22
SSJ (JACK)	5–26	/5–42
SSJ (JOG/EDIT)	5–26	/5–42
WIRING	5–29	/5–29
SSJ (REGULATOR)	5–30	/5–42
SSJ (OSD)	5–31	/5–42
PRE/REC AMP	5–32	/ –
SSJ (SERVO)	5–34	/5–42
SENSOR/MOTOR DRIVE	5–37	/5–36
CAPSTAN MOTOR DRIVE	5–38	/ –
SSJ (SYS. CON.)	5–38	/5–42
SSJ (SUB µP)	5–40	/5–42
Y/CHROMA	5–46	/5–48
POWER TRANS. (For AW)	5–50	/5–50
REGULATOR (For AW)	5–50	/5–54
POWER TRANS. (For A)	5–52	/5–52
REGULATOR (For A)	5–53	/5–54
REMOTE CONTROL	5–55	/ –

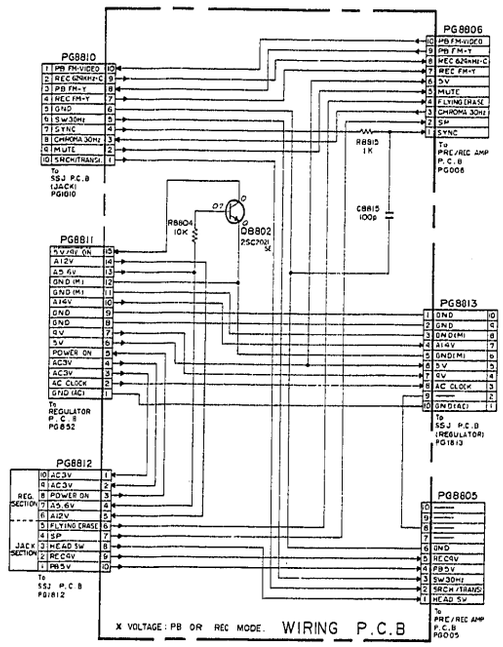
SSJ (JACK) SCHEMATIC DIAGRAM



SSJ (JOG/EDIT) SCHEMATIC DIAGRAM

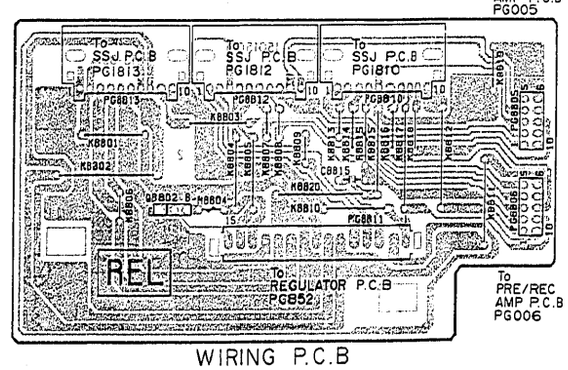


WIRING SCHEMATIC DIAGRAM



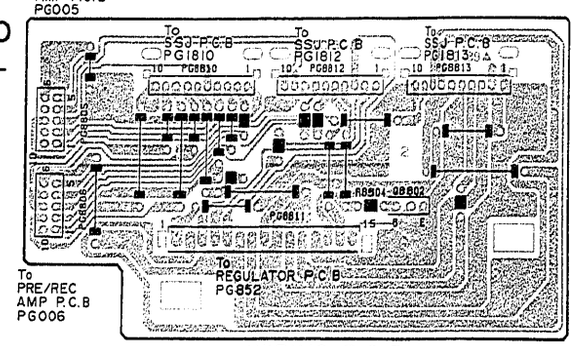
	SCHEMATIC DIAGRAM	CIRCUIT BOARD DIAGRAM
IF/TUNER UNIT	5-8	—
TIMER	5-10	5-12
RELAY	5-10	5-13
JOG・DIAL	5-10	5-13
RF CONVERTER	5-14	—
DOOR SWITCH	5-15	—
FRONT SWITCH	5-16	5-16
FRONT JACK	5-17	5-17
AUDIO (AUDIO I/O)	5-18	5-22
LINE SELECTOR	5-18	5-24
BASS BOOST	5-18	5-25
AUDIO (FM AUDIO)	5-20	5-22
SSJ (JACK)	5-26	5-42
SSJ (JOG/EDIT)	5-28	5-42
WIRING	5-28	5-29
SSJ (REGULATOR)	5-30	5-42
SSJ (OSD)	5-31	5-42
PRE/REC AMP	5-32	—
SSJ (SERVO)	5-34	5-42
SENSOR/MOTOR DRIVE	5-37	5-36
CAPSTAN MOTOR DRIVE	5-38	—
SSJ (SYS. CON.)	5-38	5-42
SSJ (SUB μP)	5-40	5-42
Y/CHROMA	5-46	5-48
POWER TRANS. (For AW)	5-50	5-50
REGULATOR (For AW)	5-50	5-54
POWER TRANS. (For A)	5-52	5-52
REGULATOR (For A)	5-53	5-54
REMOTE CONTROL	5-55	—

WIRING CIRCUIT BOARD -COMPONENTS SIDE-



WIRING P.C.B
—COMPONENTS SIDE—

WIRING CIRCUIT BOARD -SOLDER SIDE-



WIRING P.C.B
—SOLDER SIDE—

※1 (D679, R1699, C677)

Applicable serial numbers

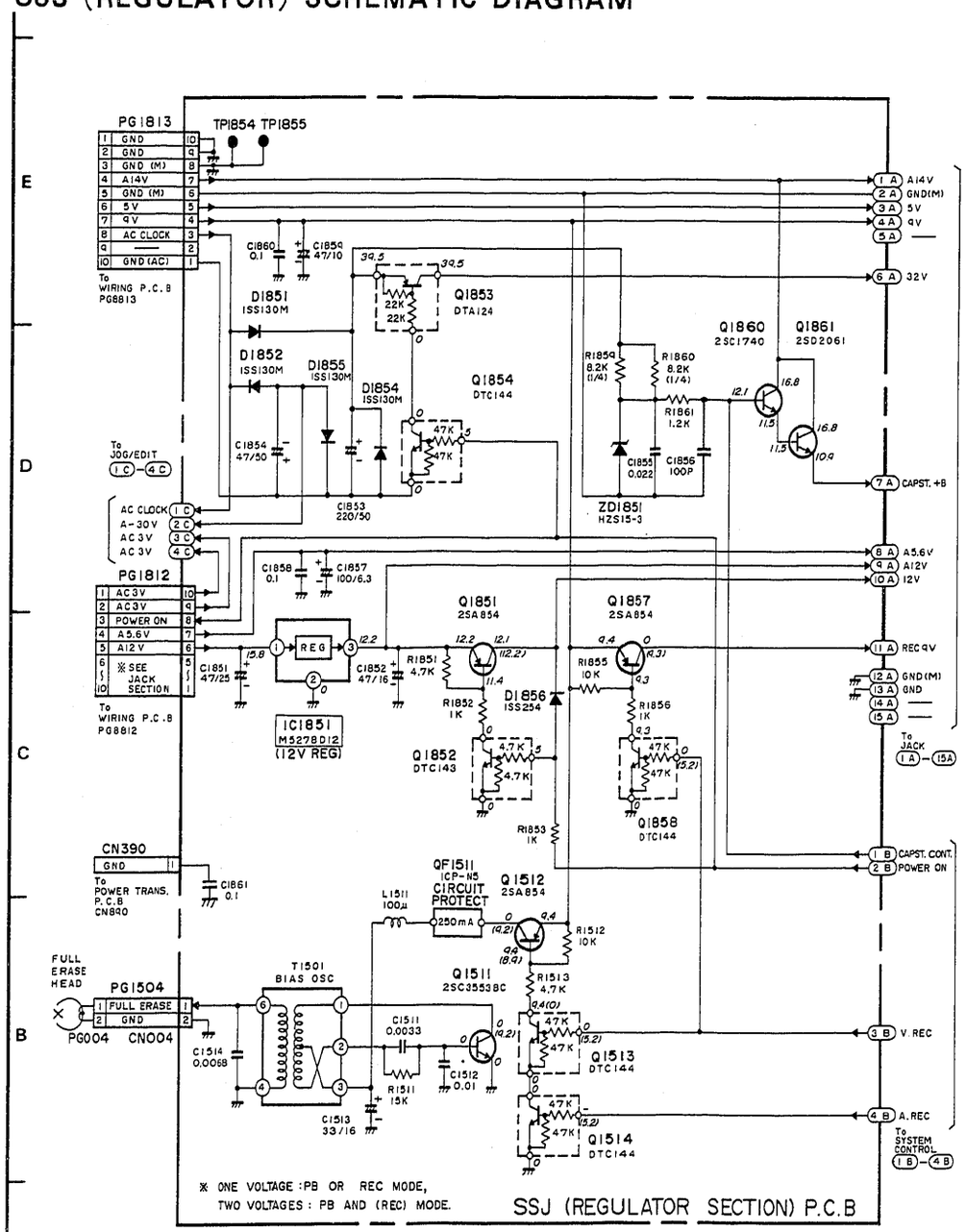
VT-F430(A)	91208646 and later deleted
VT-F430(AW)	91207246 and later deleted

※2 IC671 (M747-B04)

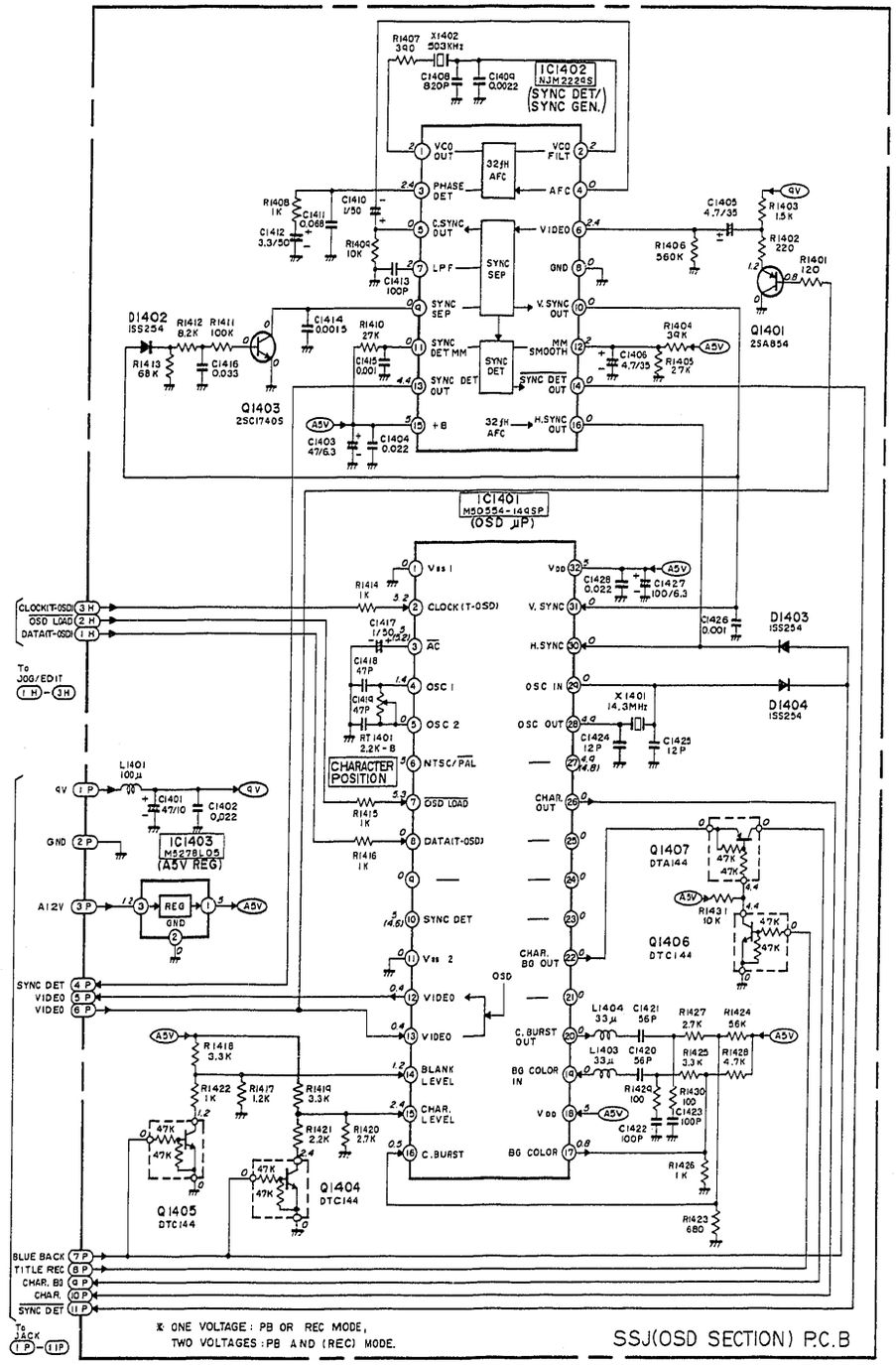
Applicable serial numbers

VT-F430(A)	91208646 and later
VT-F430(AW)	91207246 and later

SSJ (REGULATOR) SCHEMATIC DIAGRAM



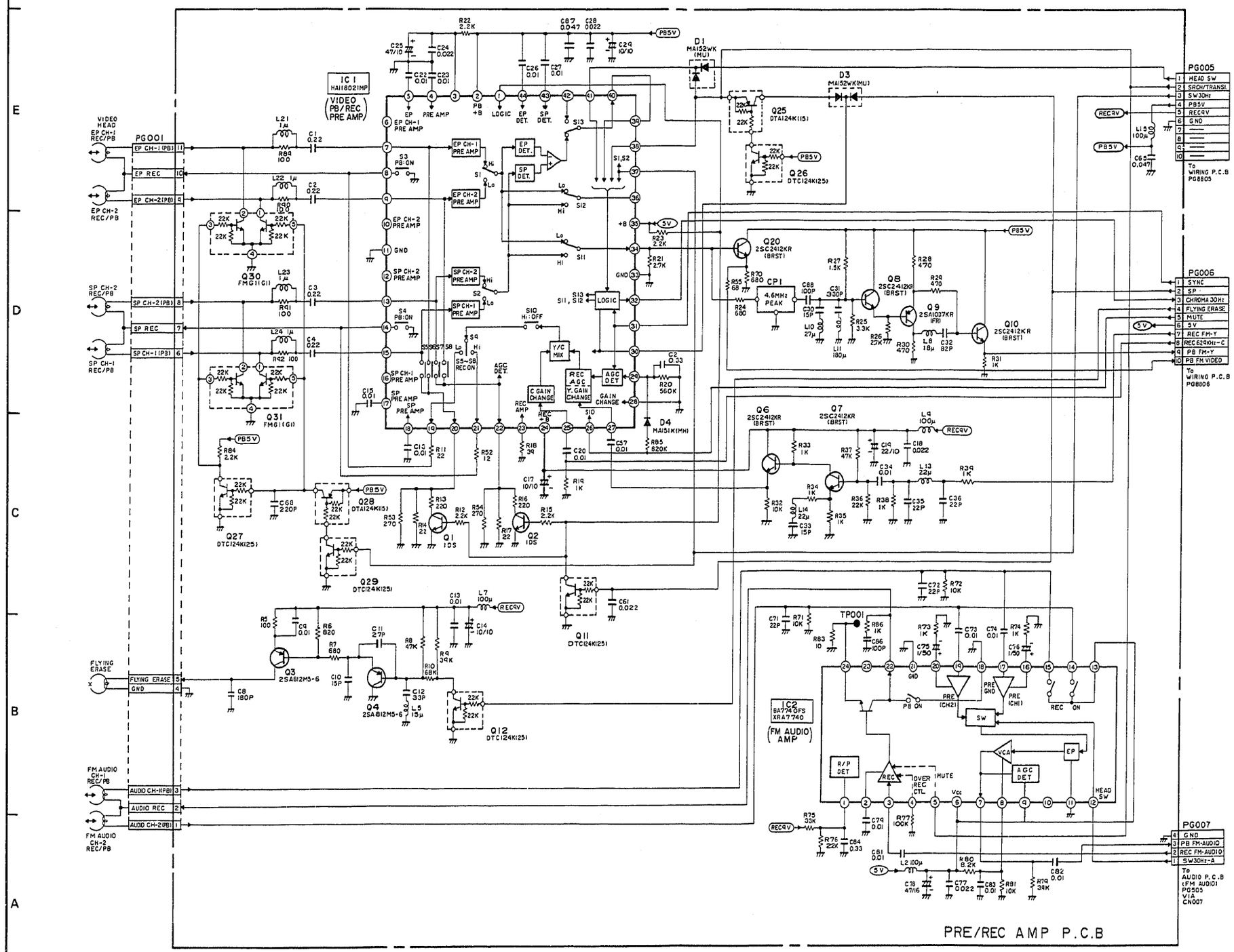
SSJ (OSD) SCHEMATIC DIAGRAM



1 2 3 4 5 6 7 8

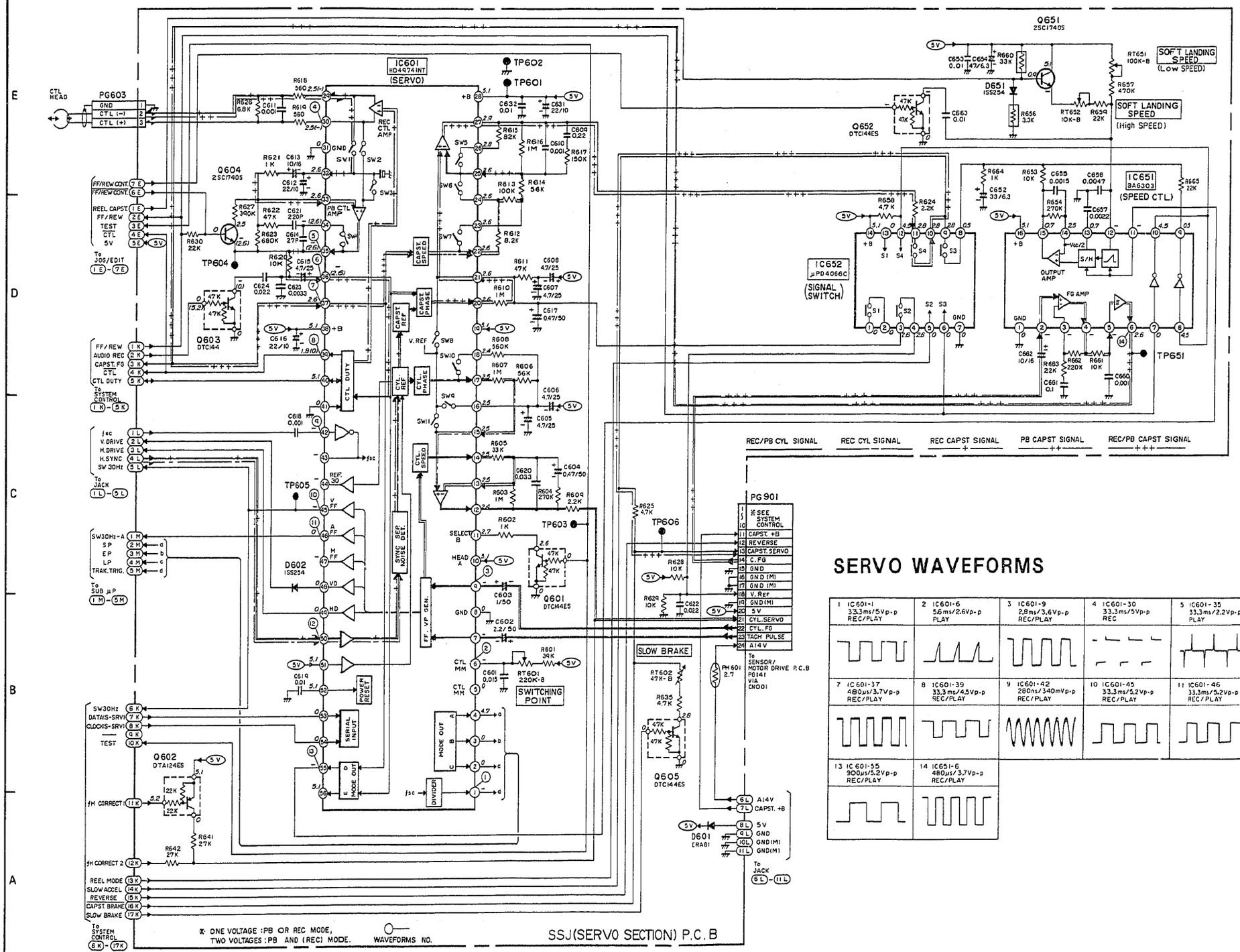
SSJ(REGULATOR) 5-30 5-31 SSJ(OSD)

PRE/REC AMP SCHEMATIC DIAGRAM



PRE/REC AMP 5-32 5-33 PRE/REC AMP

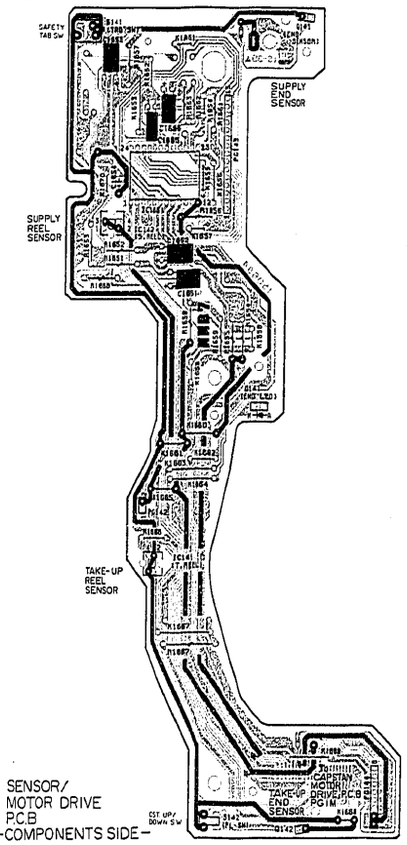
SSJ (SERVO) SCHEMATIC DIAGRAM



SERVO WAVEFORMS

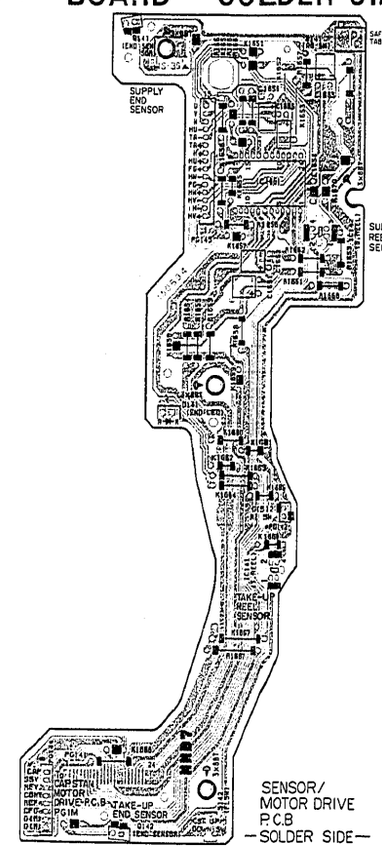
1 IC601-1 33.3ms/5Vp-p REC/PLAY	2 IC601-6 5.6ms/2.6Vp-p PLAY	3 IC601-9 2.8ms/3.6Vp-p REC/PLAY	4 IC601-30 33.3ms/5Vp-p REC	5 IC601-35 33.3ms/2.2Vp-p PLAY	6 IC601-36 33.3ms/1.8Vp-p PLAY
7 IC601-37 480μs/3.7Vp-p REC/PLAY	8 IC601-39 33.3ms/4.5Vp-p REC/PLAY	9 IC601-42 280ns/340mVp-p REC/PLAY	10 IC601-45 33.3ms/5.2Vp-p REC/PLAY	11 IC601-46 33.3ms/5.2Vp-p REC/PLAY	12 IC601-50 63.5μs/4Vp-p REC/PLAY
13 IC601-55 900μs/5.2Vp-p REC/PLAY	14 IC651-6 480μs/3.7Vp-p REC/PLAY				

SENSOR/MOTOR DRIVE CIRCUIT BOARD -COMPONENTS SIDE-



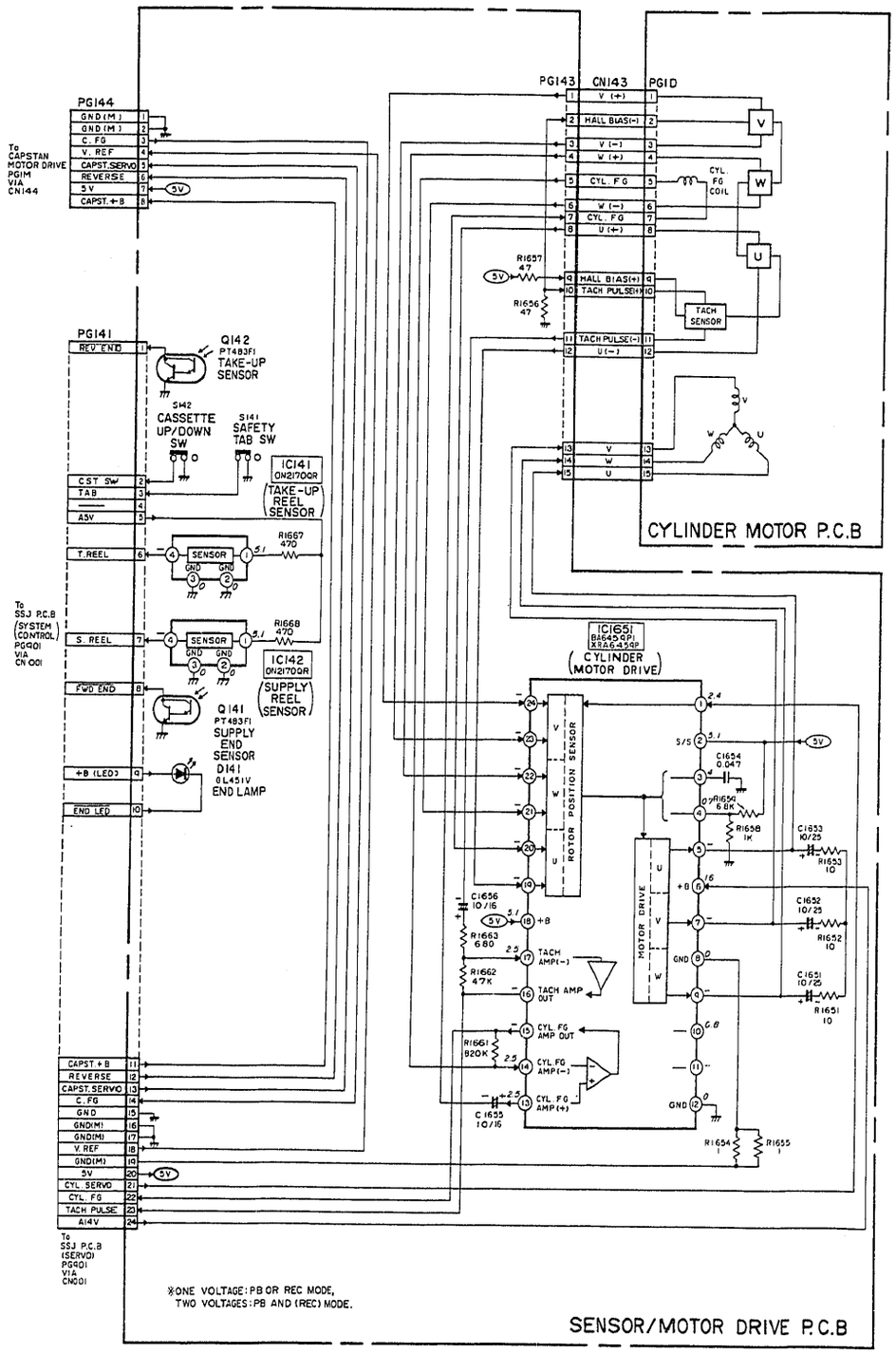
SENSOR/
MOTOR DRIVE
P.C.B
-COMPONENTS SIDE-

SENSOE/MOTOR DRIVE CIRCUIT BOARD -SOLDER SIDE-

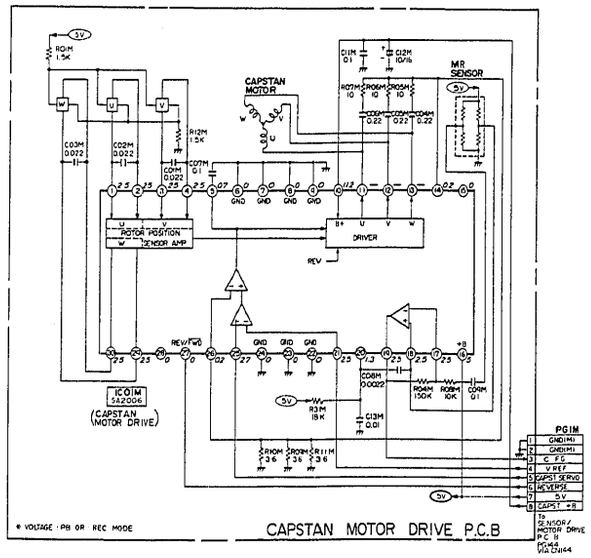


SENSOR/
MOTOR DRIVE
P.C.B
-SOLDER SIDE-

SENSOR/MOPTOR DRIVE SCHEMATIC DIAGRAM

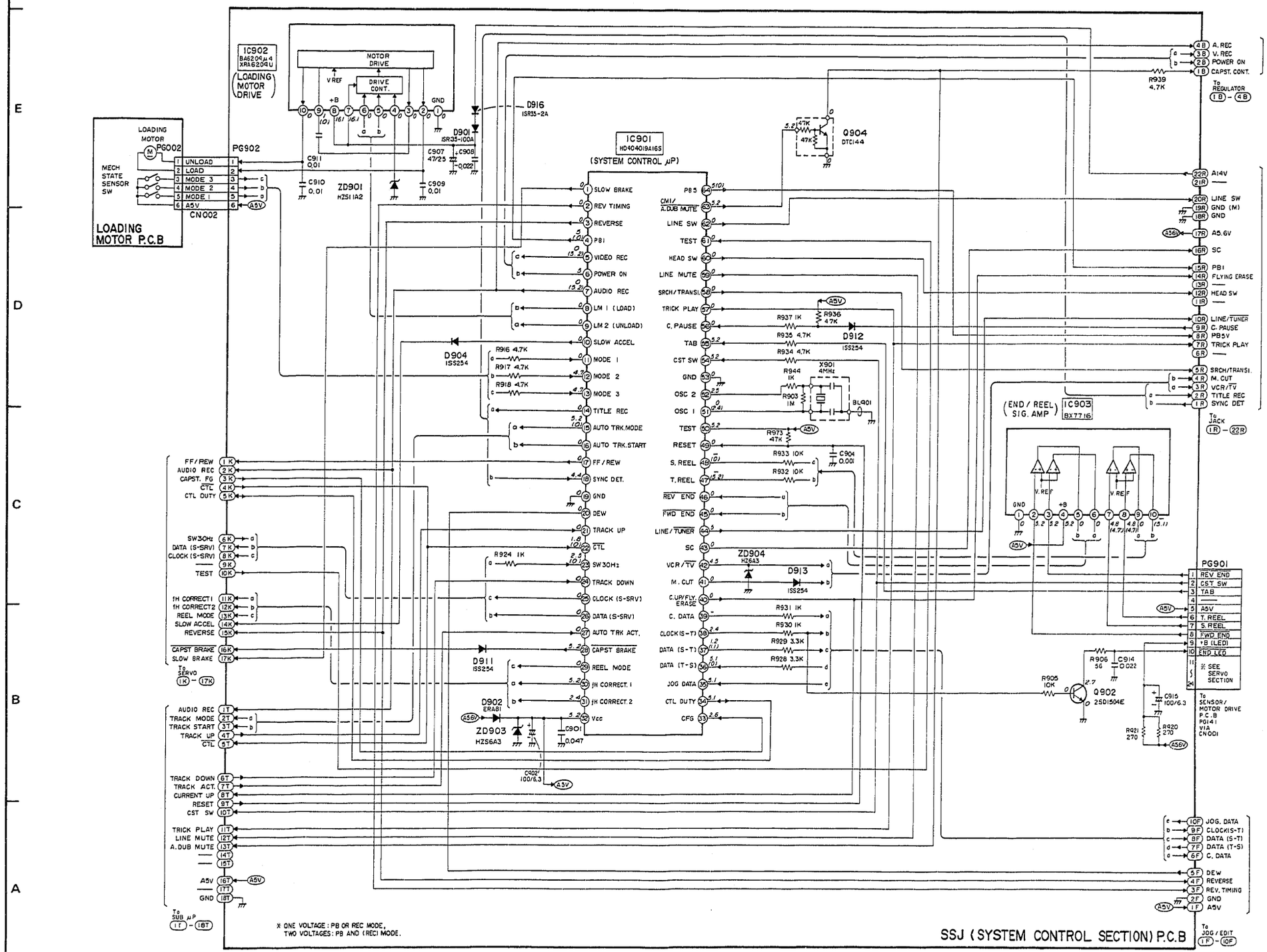


CAPSTAN MOTOR DRIVE SCHEMATIC DIAGRAM



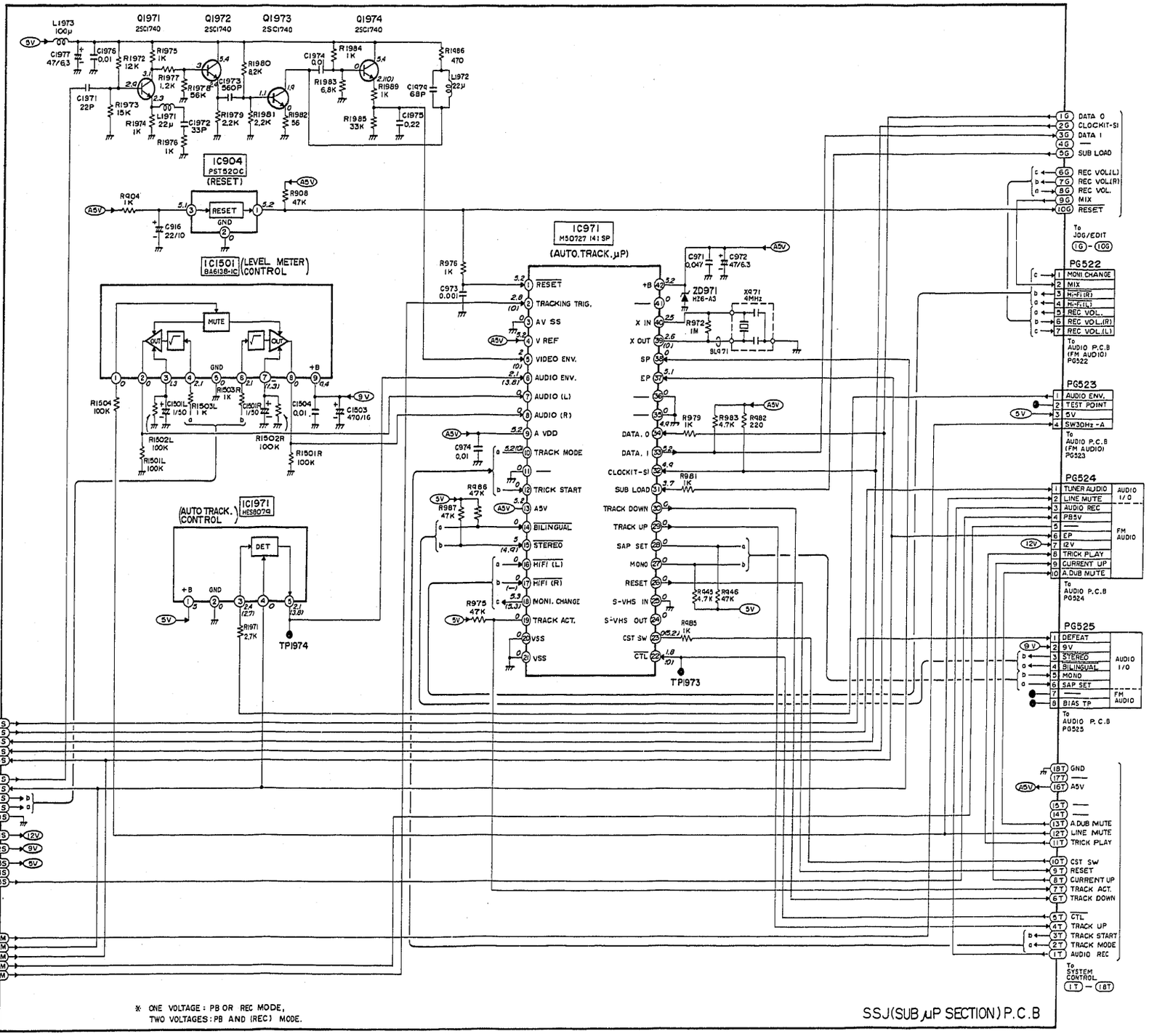
	SCHEMATIC DIAGRAM	CIRCUIT BOARD DIAGRAM
IF/TUNER UNIT	5-8	/ -
TIMER	5-10	5-12
RELAY	5-10	5-13
JOG・DIAL	5-10	5-13
RF CONVERTER	5-14	/ -
DOOR SWITCH	5-15	/ -
FRONT SWITCH	5-16	5-16
FRONT JACK	5-17	5-17
AUDIO (AUDIO I/O)	5-18	5-22
LINE SELECTOR	5-18	5-24
BASS BOOST	5-18	5-25
AUDIO (FM AUDIO)	5-20	5-22
SSJ (JACK)	5-26	5-42
SSJ (JOG/EDIT)	5-28	5-42
WIRING	5-29	5-29
SSJ (REGULATOR)	5-30	5-42
SSJ (OSD)	5-31	5-42
PRE/REC AMP	5-32	/ -
SSJ (SERVO)	5-34	5-42
SENSOR/MOTOR DRIVE	5-37	5-36
CAPSTAN MOTOR DRIVE	5-36	/ -
SSJ (SYS. CON.)	5-38	5-42
SSJ (SUB μP)	5-40	5-42
Y/CHROMA	5-46	5-48
POWER TRANS. (For AW)	5-50	5-50
REGULATOR (For AW)	5-50	5-54
POWER TRANS. (For A)	5-52	5-52
REGULATOR (For A)	5-53	5-54
REMOTE CONTROL	5-55	/ -

SSJ (SYSTEM CONTROL) SCHEMATIC DIAGRAM



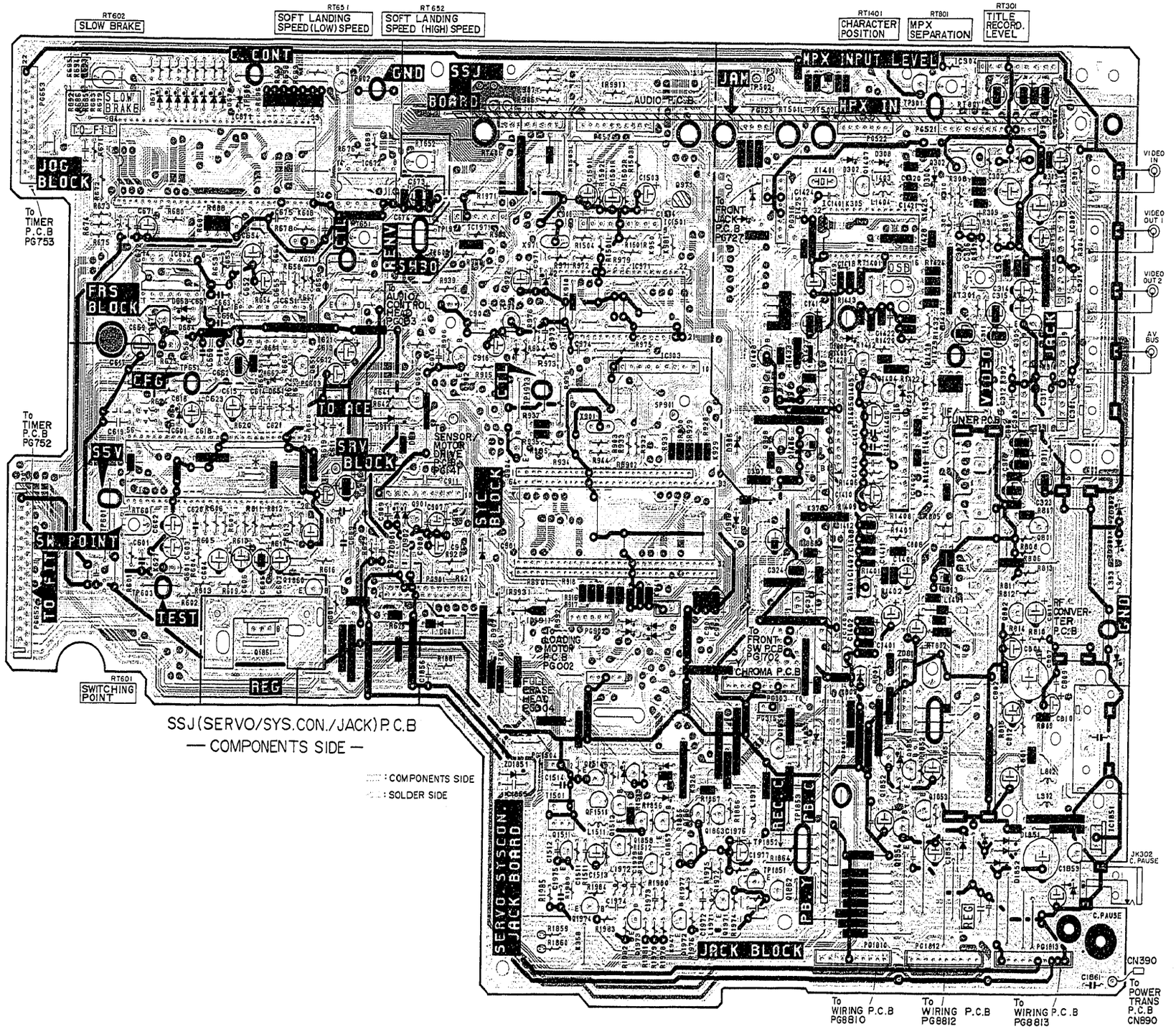
SSJ (SUB μP) SCHEMATIC DIAGRAM

	SCHEMATIC DIAGRAM	CIRCUIT BOARD DIAGRAM
IF/TUNER UNIT	5-8	—
TIMER	5-10	5-12
RELAY	5-10	5-13
JOG・DIAL	5-10	5-13
RF CONVERTER	5-14	—
DOOR SWITCH	5-15	—
FRONT SWITCH	5-16	5-16
FRONT JACK	5-17	5-17
AUDIO (AUDIO I/O)	5-18	5-22
LINE SELECTOR	5-18	5-24
BASS BOOST	5-18	5-25
AUDIO (FM AUDIO)	5-20	5-22
SSJ (JACK)	5-28	5-42
SSJ (JOG/EDIT)	5-28	5-42
WIRING	5-29	5-29
SSJ (REGULATOR)	5-30	5-42
SSJ (OSD)	5-31	5-42
PRE/REC AMP	5-32	—
SSJ (SERVO)	5-34	5-42
SENSOR/MOTOR DRIVE	5-37	5-36
CAPSTAN MOTOR DRIVE	5-38	—
SSJ (SYS. CON.)	5-38	5-42
SSJ (SUB μP)	5-40	5-42
Y/CHROMA	5-46	5-48
POWER TRANS. (For AW)	5-50	5-50
REGULATOR (For AW)	5-50	5-54
POWER TRANS. (For A)	5-52	5-52
REGULATOR (For A)	5-53	5-54
REMOTE CONTROL	5-55	—



SSJ (SERVO/SYS. CON./JACK) CIRCUIT BOARD –COMPONENTS SIDE–

	SCHEMATIC DIAGRAM	CIRCUIT BOARD DIAGRAM
IF/TUNER UNIT	5-8	/ –
TIMER	5-10	/5-12
RELAY	5-10	/5-13
JOG·DIAL	5-10	/5-13
RF CONVERTER	5-14	/ –
DOOR SWITCH	5-15	/ –
FRONT SWITCH	5-16	/5-16
FRONT JACK	5-17	/5-17
AUDIO (AUDIO I/O)	5-18	/5-22
LINE SELECTOR	5-18	/5-24
BASS BOOST	5-18	/5-25
AUDIO (FM AUDIO)	5-20	/5-22
SSJ (JACK)	5-26	/5-42
SSJ (JOG/EDIT)	5-28	/5-42
WIRING	5-29	/5-29
SSJ (REGULATOR)	5-30	/5-42
SSJ (OSD)	5-31	/6-42
PRE/REC AMP	5-32	/ –
SSJ (SERVO)	5-34	/5-42
SENSOR/MOTOR DRIVE	5-37	/5-36
CAPSTAN MOTOR DRIVE	5-38	/ –
SSJ (SYS. CON.)	5-38	/5-42
SSJ (SUB μP)	5-40	/5-42
Y/CHROMA	5-46	/5-48
POWER TRANS. (For AW)	5-50	/5-50
REGULATOR (For AW)	5-50	/5-54
POWER TRANS. (For A)	5-52	/5-52
REGULATOR (For A)	5-53	/5-54
REMOTE CONTROL	5-55	/ –

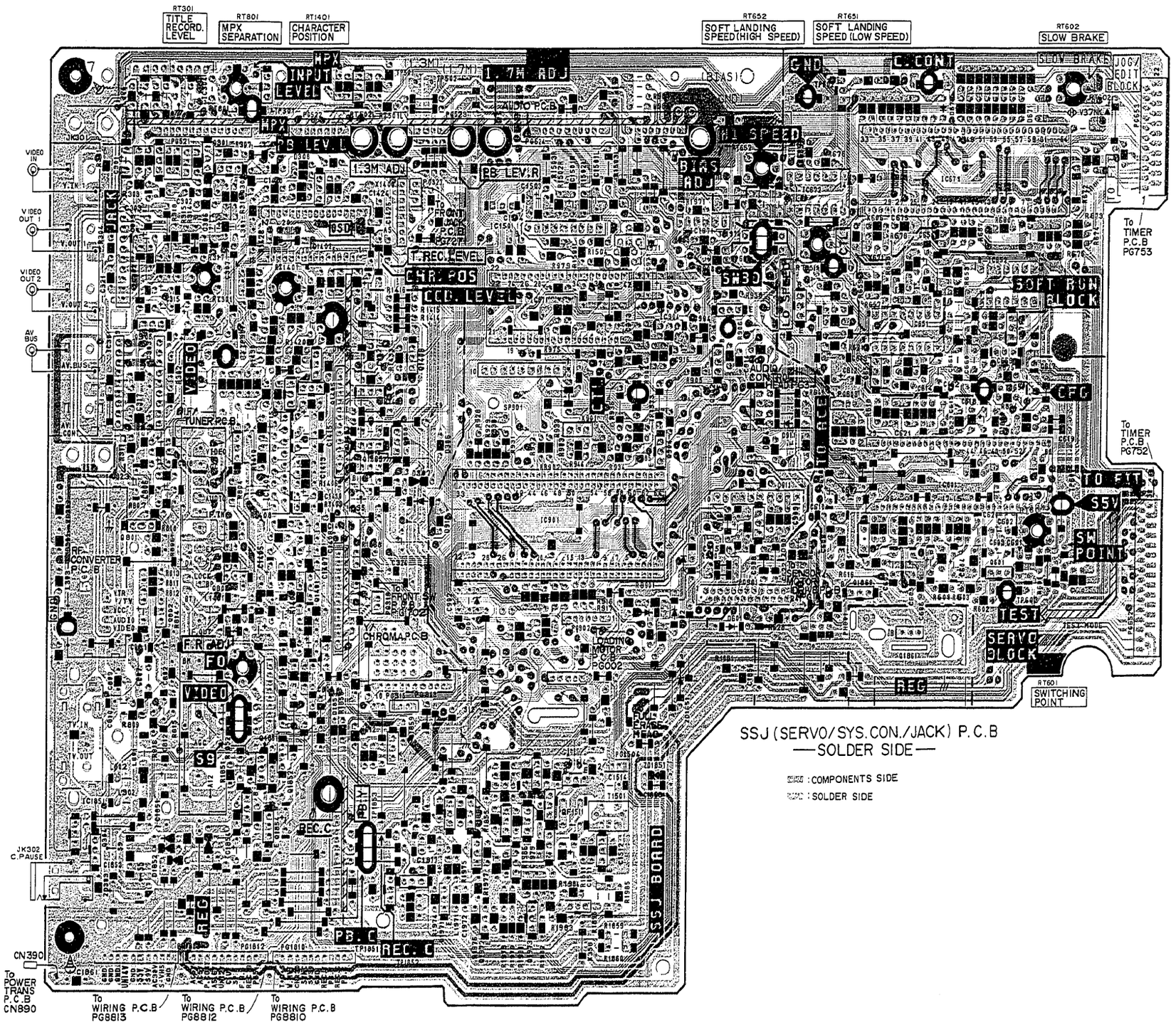


SSJ (SERVO/SYS.CON./JACK) P.C.B
— COMPONENTS SIDE —

: COMPONENTS SIDE
: SOLDER SIDE

SSJ (SERVO/SYS. CON./JACK) CIRCUIT BOARD –SOLDER SIDE–

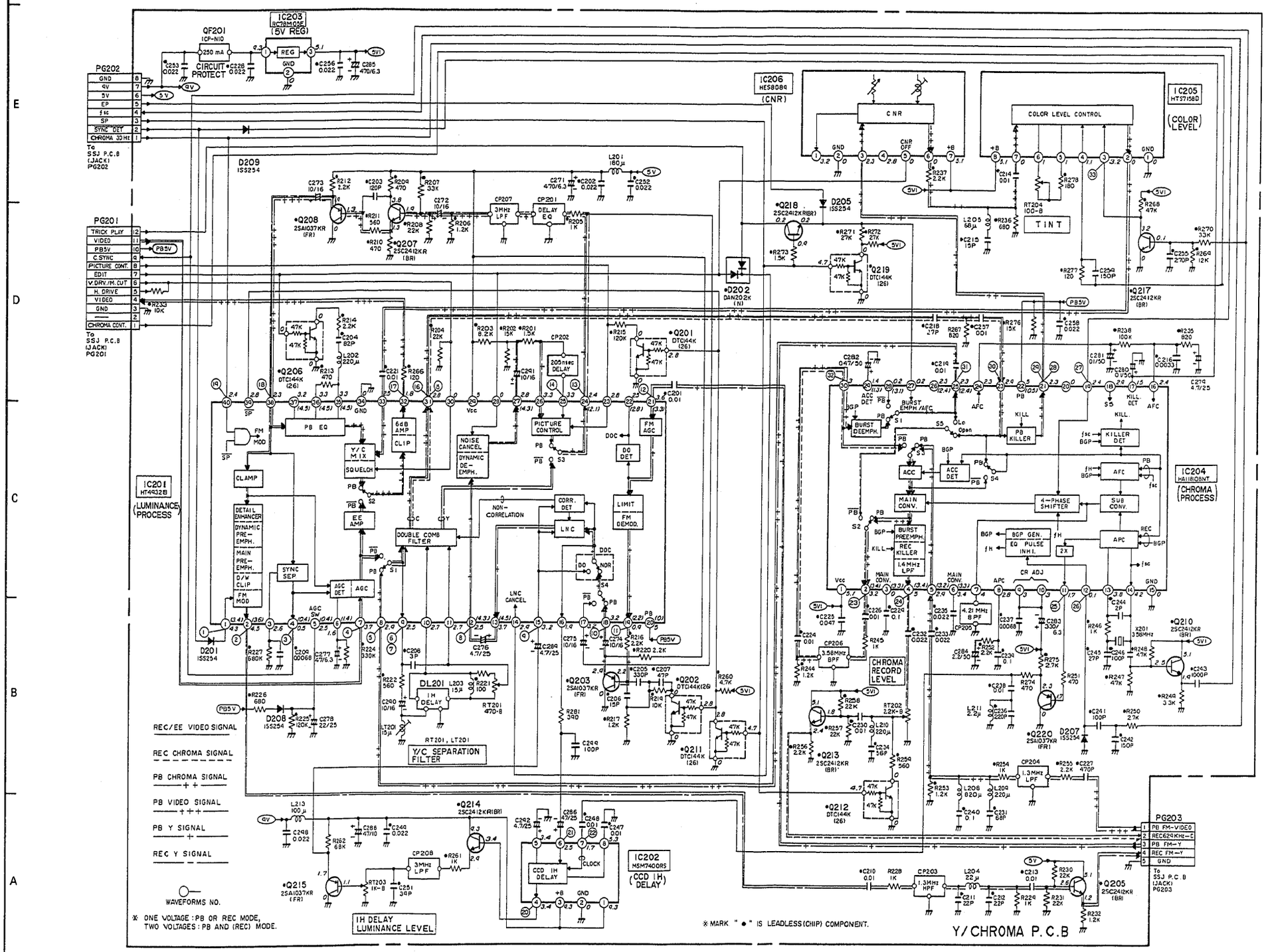
	SCHEMATIC DIAGRAM	CIRCUIT BOARD DIAGRAM
IF/TUNER UNIT	5-8	–
TIMER	5-10	5-12
RELAY	5-10	5-13
JOG·DIAL	5-10	5-13
RF CONVERTER	5-14	–
DOOR SWITCH	5-15	–
FRONT SWITCH	5-16	5-16
FRONT JACK	5-17	5-17
AUDIO (AUDIO I/O)	5-18	5-22
LINE SELECTOR	5-18	5-24
BASS BOOST	5-18	5-25
AUDIO (FM AUDIO)	5-20	5-22
SSJ (JACK)	5-28	5-42
SSJ (JOG/EDIT)	5-28	5-42
WIRING	5-28	5-29
SSJ (REGULATOR)	5-30	5-42
SSJ (OSD)	5-31	5-42
PRE/REC AMP	5-32	–
SSJ (SERVO)	5-34	5-42
SENSOR/MOTOR DRIVE	5-37	5-36
CAPSTAN MOTOR DRIVE	5-38	–
SSJ (SYS. CON.)	5-38	5-42
SSJ (SUB μP)	5-40	5-42
Y/CHROMA	5-46	5-48
POWER TRANS. (For AW)	5-50	5-50
REGULATOR (For AW)	5-50	5-54
POWER TRANS. (For A)	5-52	5-52
REGULATOR (For A)	5-53	5-54
REMOTE CONTROL	5-55	–



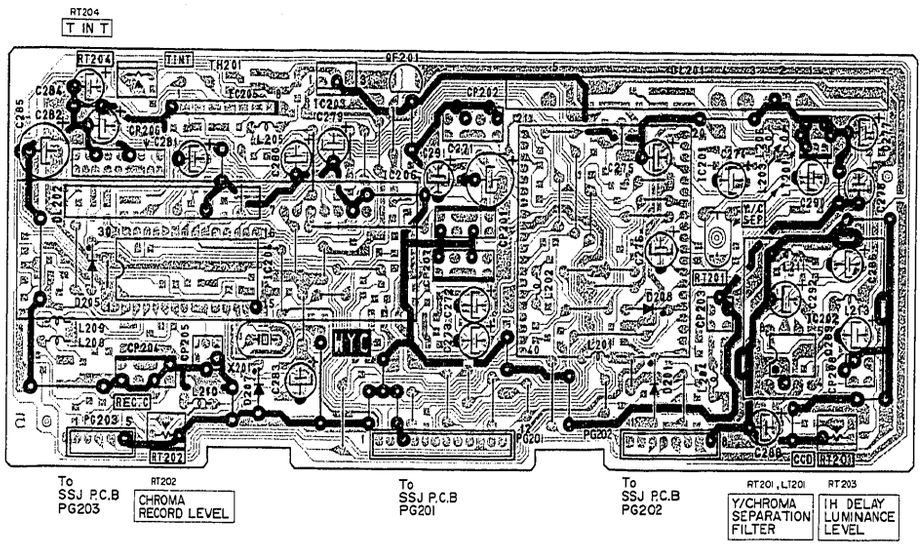
SSJ (SERVO/SYS.CON./JACK) P.C.B
—SOLDER SIDE—

: COMPONENTS SIDE
: SOLDER SIDE

Y/CHROMA SCHEMATIC DIAGRAM

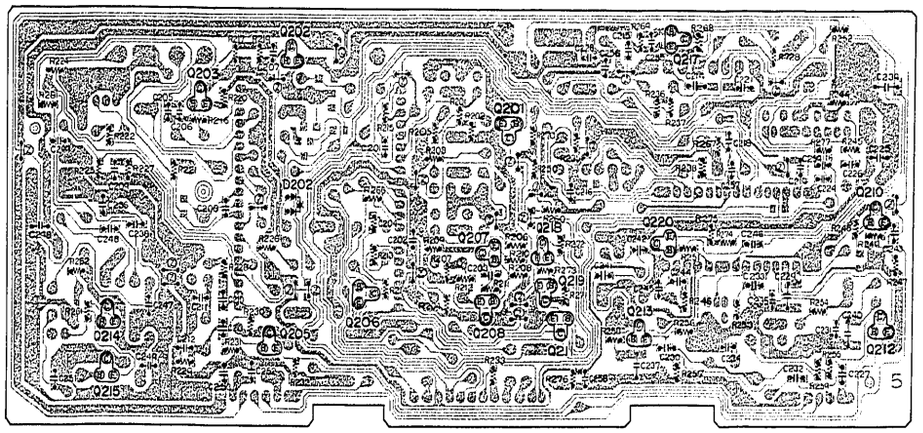


Y/CHROMA CIRCUIT BOARD
-COMPONENTS SIDE(DISCRETE PARTS)-



Y/CHROMA P.C.B
-COMPONENTS SIDE-
(DISCRETE PARTS)

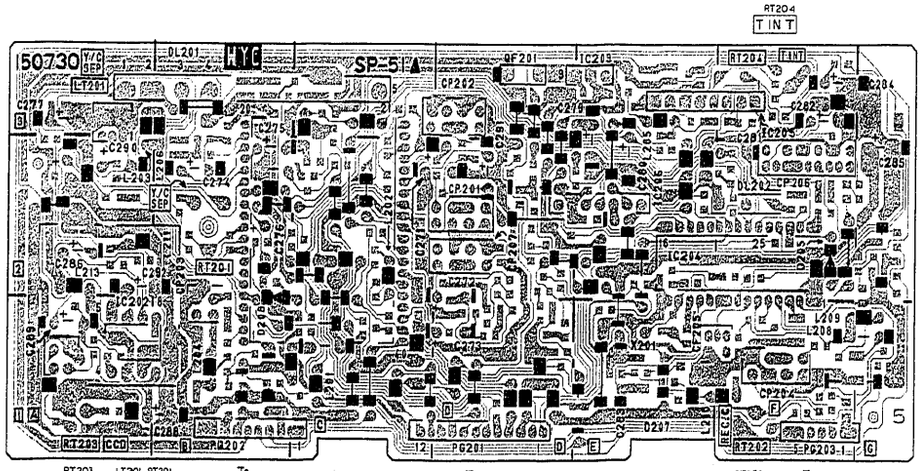
Y/CHROMA CIRCUIT BOARD
-SOLDER SIDE(CHIP PARTS)-



NOTE: MARK "Ⓙ" IS LEADLESS (CHIP) JUMPER.

Y/CHROMA P.C.B
-SOLDER SIDE-
(CHIP PARTS SIDE)

Y/CHROMA CIRCUIT BOARD
-SOLDER SIDE(DISCRETE PARTS)-

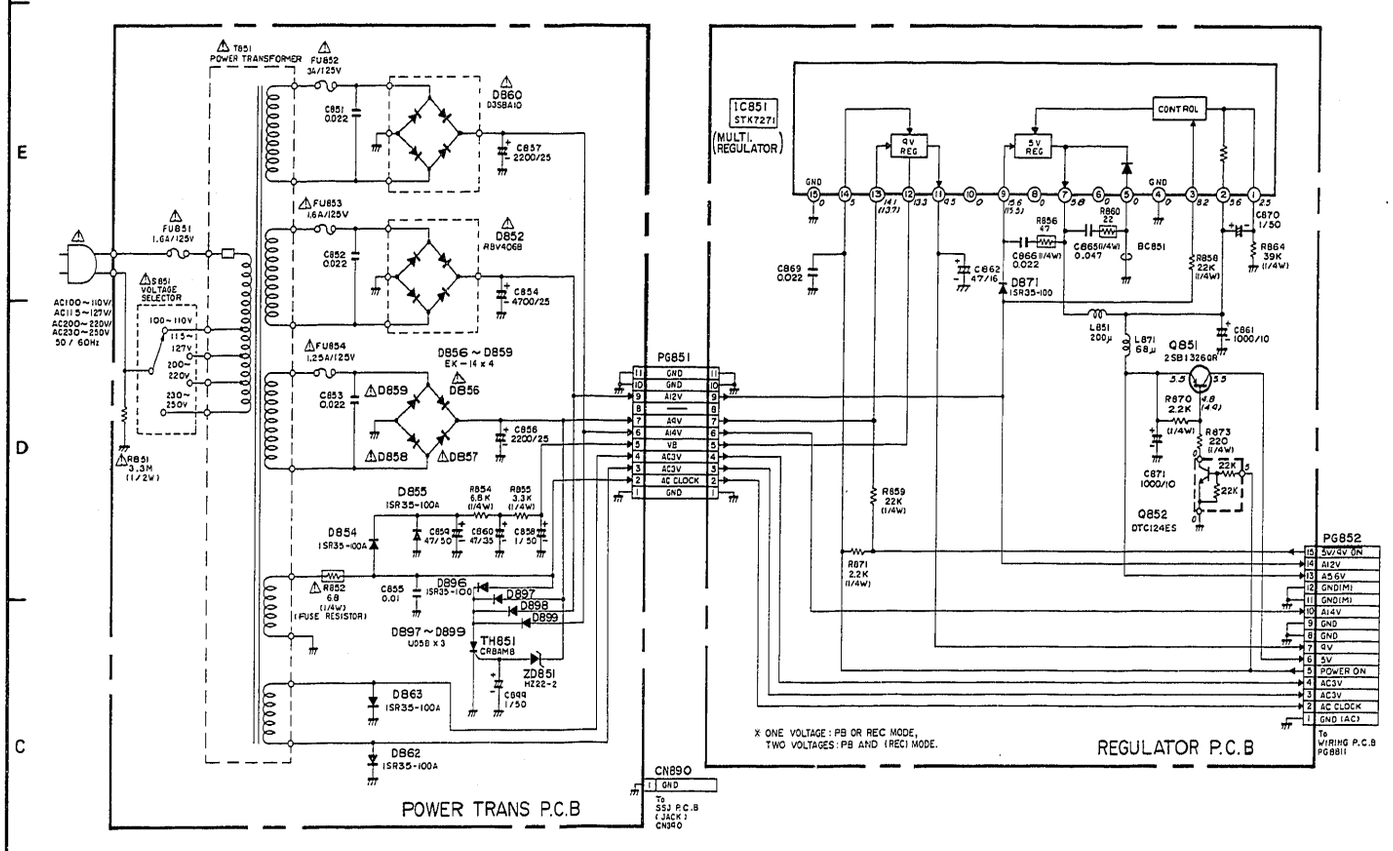


Y/CHROMA P.C.B
-SOLDER SIDE-
(DISCRETE PARTS)

Y/CHROMA WAVEFORMS

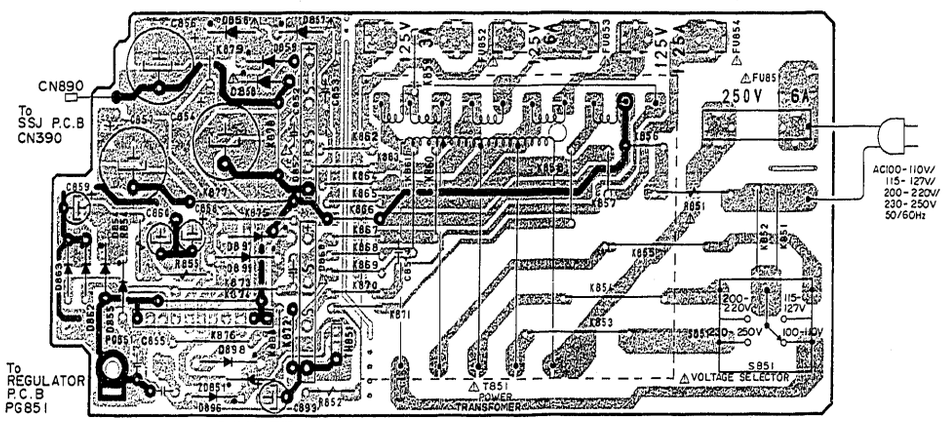
1 IC201-1 63.5μs/1.2Vp-p REC	2 IC201-2 33.3ms/1.5Vp-p	3 IC201-4 63.5μs/4.2Vp-p REC/PLAY	4 IC201-7 63.5μs/1.0Vp-p REC	5 IC201-8 63.5μs/500mVp-p PLAY	6 IC201-9 63.5μs/500mVp-p REC	7 IC201-9 63.5μs/500mVp-p PLAY
8 IC201-12 63.5μs/350mVp-p PLAY	9 IC201-15 63.5μs/350mVp-p PLAY	10 IC201-18 63.5μs/350mVp-p PLAY	11 IC201-19 63.5μs/0.8Vp-p PLAY	12 IC201-21 16.7ms/0.4Vp-p PLAY	13 IC201-24 63.5μs/0.5Vp-p REC/PLAY	14 IC201-25 63.5μs/0.5Vp-p PLAY
15 IC201-31 63.5μs/0.5Vp-p REC	16 IC201-31 63.5μs/0.5Vp-p PLAY	17 IC201-32 63.5μs/2Vp-p REC/PLAY	18 IC201-38 63.5μs/0.3Vp-p REC/PLAY	19 IC201-40 33.3ms/3Vp-p REC/PLAY	20 IC202-4 63.5μs/12Vp-p PLAY	21 IC202-6 63.5μs/300mVp-p PLAY
22 IC202-7 140ns/450mVp-p REC/PLAY	23 IC204-2 63.5μs/760mVp-p REC	24 IC204-4 63.5μs/430mVp-p REC	25 IC204-11 140ns/0.5Vp-p REC/PB	26 IC204-12 63.5μs/3.3Vp-p REC/PB	27 IC204-19 33.3ms/5Vp-p REC/PB	28 IC204-21 63.5μs/830mVp-p REC
29 IC204-21 63.5μs/830mVp-p PLAY	30 IC204-23 63.5μs/210mVp-p PB	31 IC204-25 63.5μs/540mVp-p PB	32 IC204-30 63.5μs/350mVp-p REC	33 IC205-3 63.5μs/3.5Vp-p REC/PLAY		

POWER TRANS./REGULATOR SCHEMATIC DIAGRAM (For AW)



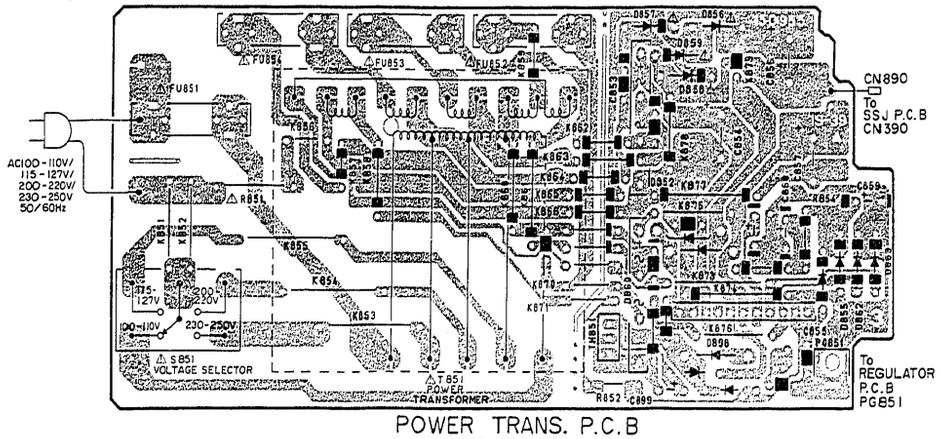
	SCHEMATIC DIAGRAM	CIRCUIT BOARD DIAGRAM
IF/TUNER UNIT	5-8	/ —
TIMER	5-10	/5-12
RELAY	5-10	/5-13
JOG・DIAL	5-10	/5-13
RF CONVERTER	5-14	/ —
DOOR SWITCH	5-15	/ —
FRONT SWITCH	5-16	/5-16
FRONT JACK	5-17	/5-17
AUDIO (AUDIO I/O)	5-18	/5-22
LINE SELECTOR	5-18	/5-24
BASS BOOST	5-18	/5-25
AUDIO (FM AUDIO)	5-20	/5-22
SSJ (JACK)	5-26	/5-42
SSJ (JOG/EDIT)	5-28	/5-42
WIRING	5-29	/5-29
SSJ (REGULATOR)	5-30	/5-42
SSJ (OSD)	5-31	/5-42
PRE/REC AMP	5-32	/ —
SSJ (SERVO)	6-34	/5-42
SENSOR/MOTOR DRIVE	5-37	/5-38
CAPSTAN MOTOR DRIVE	5-36	/ —
SSJ (SYS. CON.)	5-38	/5-42
SSJ (SUB μP)	5-40	/5-42
Y/CHROMA	5-46	/5-48
POWER TRANS. (For AW)	5-50	/5-50
REGULATOR (For AW)	5-50	/5-54
POWER TRANS. (For A)	5-52	/5-52
REGULATOR (For A)	5-53	/5-54
REMOTE CONTROL	5-55	/ —

POWER TRANS. CIRCUIT BOARD —COMPONENTS SIDE— (For AW)



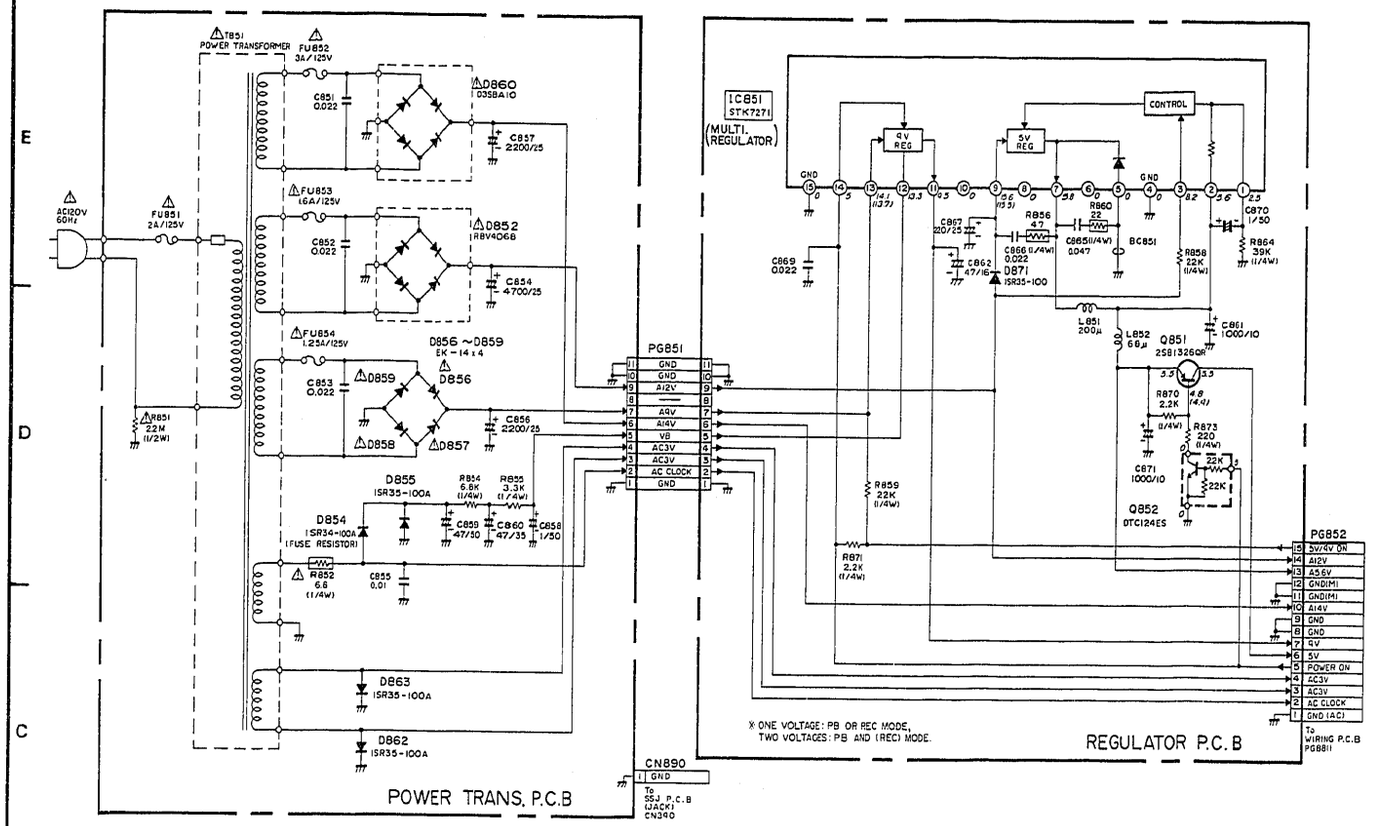
POWER TRANS. P.C.B —COMPONENTS SIDE—

POWER TRANS. CIRCUIT BOARD —SOLDE SIDE— (For AW)



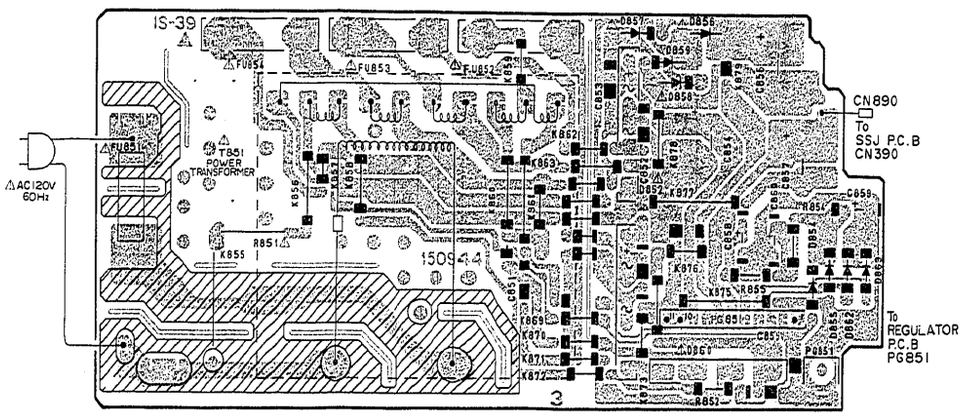
POWER TRANS. P.C.B —SOLDER SIDE—

POWER TRANS./REGULATOR SCHEMATIC DIAGRAM (For A)



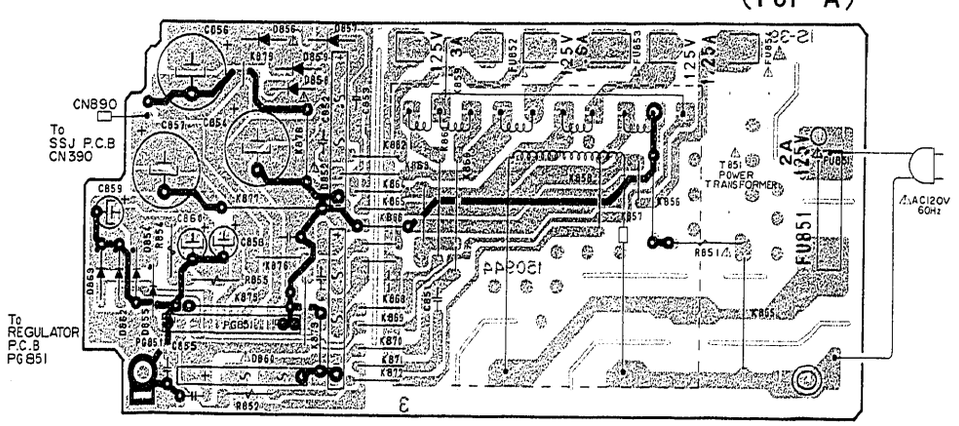
	SCHEMATIC DIAGRAM	CIRCUIT BOARD DIAGRAM
IF/TUNER UNIT	5-8	/ —
TIMER	5-10	5-12
RELAY	5-10	5-13
JOG・DIAL	5-10	5-13
RF CONVERTER	5-14	/ —
DOOR SWITCH	5-15	/ —
FRONT SWITCH	5-16	5-16
FRONT JACK	5-17	5-17
AUDIO (AUDIO I/O)	5-18	5-22
LINE SELECTOR	5-18	5-24
BASS BOOST	5-18	5-25
AUDIO (FM AUDIO)	5-20	5-22
SSJ (JACK)	5-26	5-42
SSJ (JOG/EDIT)	5-28	5-42
WIRING	5-29	5-29
SSJ (REGULATOR)	5-30	5-42
SSJ (DSD)	5-31	5-42
PRE/REC AMP	5-32	/ —
SSJ (SERVO)	5-34	5-42
SENSOR/MOTOR DRIVE	5-37	5-36
CAPSTAN MOTOR DRIVE	5-36	/ —
SSJ (SYS. CON.)	5-38	5-42
SSJ (SUB μP)	5-40	5-42
Y/CHROMA	5-46	5-48
POWER TRANS. (For AW)	5-50	5-50
REGULATOR (For AW)	5-50	5-54
POWER TRANS. (For A)	5-52	5-52
REGULATOR (For A)	5-53	5-54
REMOTE CONTROL	5-55	/ —

POWER TRANS. CIRCUIT BOARD —SOLDER SIDE— (For A)



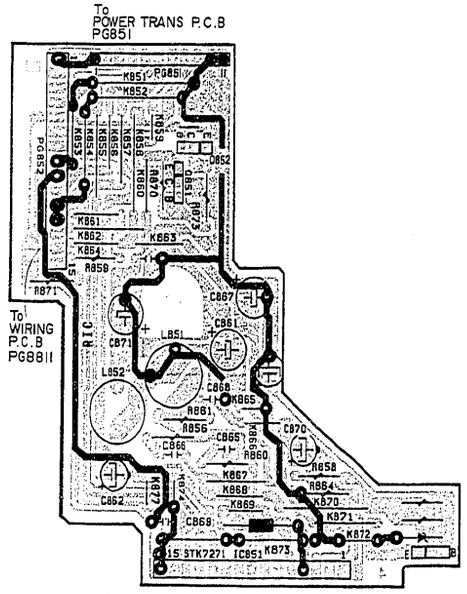
POWER TRANS. P.C.B —SOLDER SIDE—

POWER TRANS. CIRCUIT BOARD —COMPONENTS SIDE— (For A)



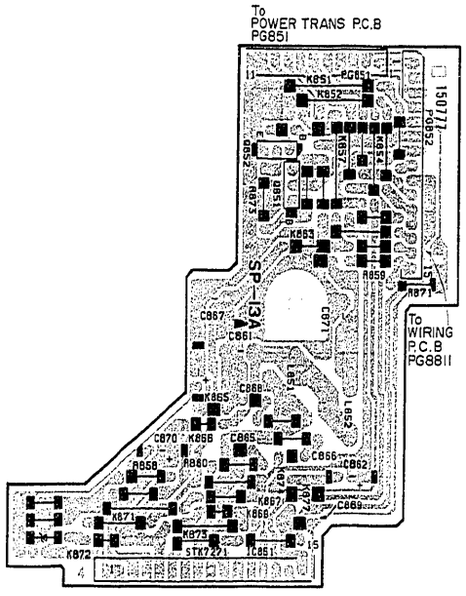
POWER TRANS. P.C.B —COMPONENTS SIDE—

REGULATOR CIRCUIT BOARD —COMPONENTS SIDE—



REGULATOR P.C.B —COMPONENTS SIDE—

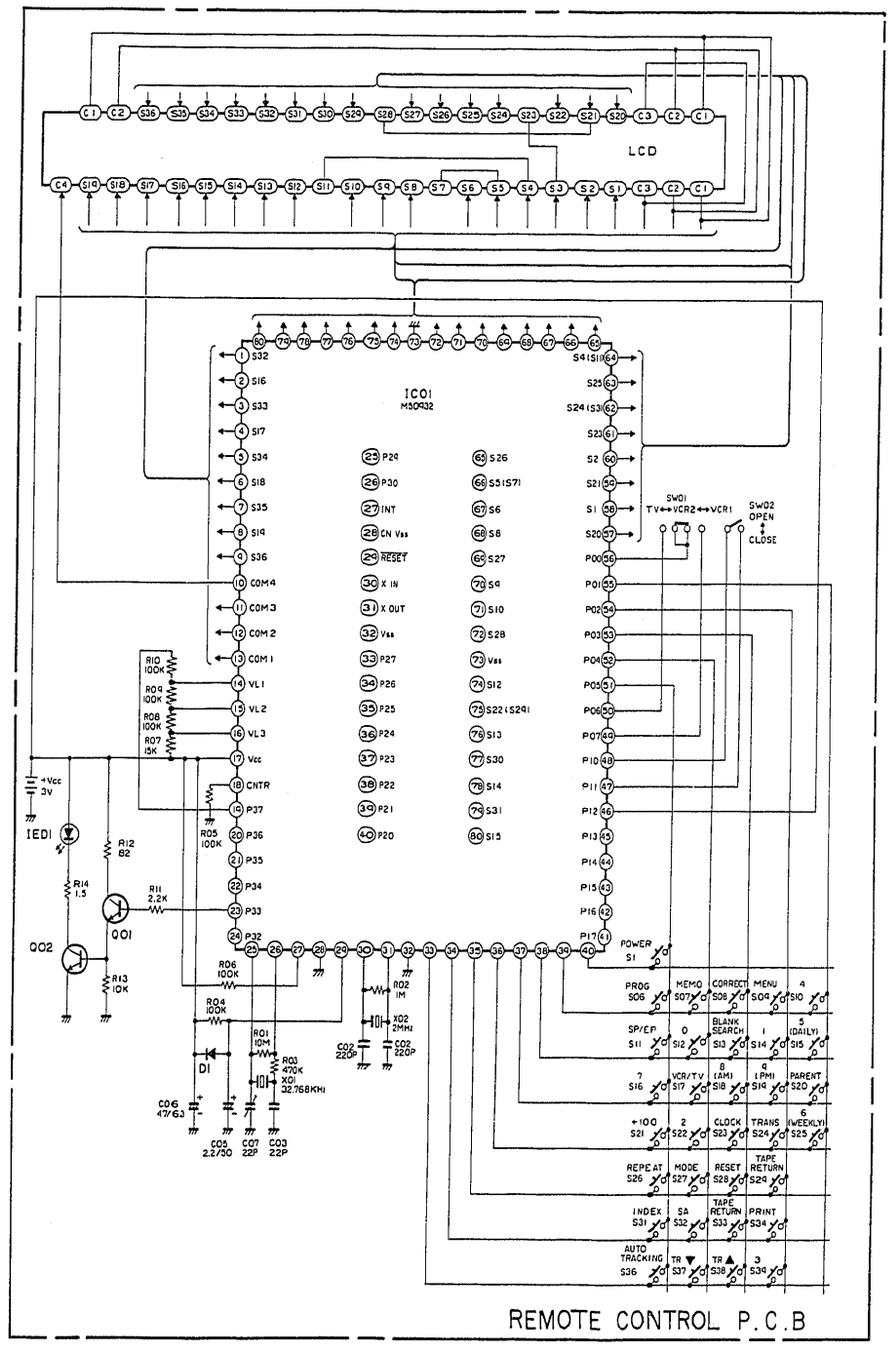
REGULATOR CIRCUIT BAORD —SOLDER SIDE—



REGULATOR P.C.B —SOLDER SIDE—

	SCHEMATIC DIAGRAM	CIRCUIT BOARD DIAGRAM
IF/TUNER UNIT	5-8	/ –
TIMER	5-10	/5-12
RELAY	5-10	/5-13
JOG·DIAL	5-10	/5-13
RF CONVERTER	5-14	/ –
DOOR SWITCH	5-15	/ –
FRONT SWITCH	5-16	/5-16
FRONT JACK	5-17	/5-17
AUDIO (AUDIO I/O)	5-16	/5-22
LINE SELECTOR	5-18	/5-24
BASS BOOST	5-18	/5-25
AUDIO (FM AUDIO)	5-20	/5-22
SSJ (JACK)	5-26	/5-42
SSJ (JOG/EDIT)	5-28	/5-42
WIRING	5-29	/5-29
SSJ (REGULATOR)	5-30	/5-42
SSJ (OSD)	5-31	/5-42
PRE/REC AMP	5-32	/ –
SSJ (SERVO)	5-34	/5-42
SENSOR/MOTOR DRIVE	5-37	/5-36
CAPSTAN MOTOR DRIVE	5-38	/ –
SSJ (SYS. CON.)	5-38	/5-42
SSJ (SUB μP)	5-40	/5-42
Y/CHROMA	5-46	/5-48
POWER TRANS. (For AW)	5-50	/5-50
REGULATOR (For AW)	5-50	/5-54
POWER TRANS. (For A)	5-52	/5-52
REGULATOR (For A)	5-53	/5-54
REMOTE CONTROL	5-55	/ –

REMOTE CONTROL SCHEMATIC DIAGRAM



REPLACEMENT PARTS LIST
ELECTRICAL PARTS LIST

SYMBOL-NO	P-NO	DESCRIPTION
		CAPACITORS
C 201	0201006	CERAMIC CHIP 0.01UF+80-20% 50V
C 202	0201009	CERAMIC CHIP 0.022UF+80-20% 25V
C 203	0201032	CERAMIC CHIP 120PF+-5% 50V
C 204	0201030	CERAMIC CHIP 82PF+-5% 50V
C 205	0201037	CERAMIC CHIP 330PF+-5% 50V
C 206	0201022	CERAMIC CHIP 15PF+-5% 50V
C 207	0201027	CERAMIC CHIP 47PF+-5% 50V
C 208	0201013	CERAMIC CHIP 3PF+-0.25% 50V
C 209	0201062	CERAMIC CHIP 0.0068UF+-10% 50V
C 210	0201006	CERAMIC CHIP 0.01UF+80-20% 50V
C 211	0201001	CERAMIC CHIP 22PF+-5% 50V
C 212	0201001	CERAMIC CHIP 22PF+-5% 50V
C 213	0201006	CERAMIC CHIP 0.01UF+80-20% 50V
C 214	0201006	CERAMIC CHIP 0.01UF+80-20% 50V
C 215	0201022	CERAMIC CHIP 15PF+-5% 50V
C 216	0201059	CERAMIC CHIP 0.0033UF+-10% 50V
C 218	0201024	CERAMIC CHIP 27PF+-5% 50V
C 219	0201006	CERAMIC CHIP 0.01UF+80-20% 50V
C 221	0201006	CERAMIC CHIP 0.01UF+80-20% 50V
C 224	0201006	CERAMIC CHIP 0.01UF+80-20% 50V
C 225	0209990	CERAMIC CHIP 0.047UF+-10% 50V
C 226	0201006	CERAMIC CHIP 0.01UF+80-20% 50V
C 227	0201039	CERAMIC CHIP 470PF+-5% 50V
C 228	0201009	CERAMIC CHIP 0.022UF+80-20% 25V
C 229	0209987	CERAMIC CHIP 0.1UF 50V
C 230	0201006	CERAMIC CHIP 0.01UF+80-20% 50V
C 231	0201029	CERAMIC CHIP 68PF+-5% 50V
C 232	0201009	CERAMIC CHIP 0.022UF+80-20% 25V
C 233	0201009	CERAMIC CHIP 0.022UF+80-20% 25V
C 234	0201028	CERAMIC CHIP 56PF+-5% 50V
C 235	0201009	CERAMIC CHIP 0.022UF+80-20% 25V
C 236	0201035	CERAMIC CHIP 220PF+-5% 50V
C 237	0209983	CERAMIC CHIP 0.068UF+-10% 50V
C 238	0201006	CERAMIC CHIP 0.01UF+80-20% 50V
C 239	0209987	CERAMIC CHIP 0.1UF 50V
C 240	0209987	CERAMIC CHIP 0.1UF 50V
C 241	0201031	CERAMIC CHIP 100PF+-5% 50V
C 242	0201033	CERAMIC CHIP 150PF+-5% 50V
C 243	0201054	CERAMIC CHIP 1000PF+-10% 50V
C 244	0201081	CERAMIC CHIP 2PF+-0.25PF 50V
C 245	0201077	CERAMIC CHIP 27PF+-5% 50V
C 246	0201031	CERAMIC CHIP 100PF+-5% 50V
C 247	0201006	CERAMIC CHIP 0.01UF+80-20% 50V
C 248	0201006	CERAMIC CHIP 0.01UF+80-20% 50V
C 249	0201009	CERAMIC CHIP 0.022UF+80-20% 25V
C 251	0201026	CERAMIC CHIP 39PF+-5% 50V
C 252	0201009	CERAMIC CHIP 0.022UF+80-20% 25V
C 253	0201009	CERAMIC CHIP 0.022UF+80-20% 25V
C 255	0201036	CERAMIC CHIP 270PF+-5% 50V
C 256	0201009	CERAMIC CHIP 0.022UF+80-20% 25V
C 257	0201006	CERAMIC CHIP 0.01UF+80-20% 50V
C 258	0201009	CERAMIC CHIP 0.022UF+80-20% 25V
C 259	0201099	CERAMIC CHIP 150PF+-5% 50V
C 298	0201009	CERAMIC CHIP 0.022UF+80-20% 25V
C 299	0201031	CERAMIC CHIP 100PF+-5% 50V
C 307	0890044	CERAMIC DISC 0.022UF+80-20% 25V
C 317	0890045	CERAMIC DISC 0.047UF+80-20% 50V
C 321	0890045	CERAMIC DISC 0.047UF+80-20% 50V
C 403	0201066	CERAMIC CHIP 0.033UF+-10% 25V
C 404	0201065	CERAMIC CHIP 0.022UF+-10% 25V
C 405	0201062	CERAMIC CHIP 0.0068UF+-10% 50V
C 410	0201038	CERAMIC CHIP 390PF+-5% 50V
C 412	0201054	CERAMIC CHIP 1000PF+-10% 50V
C 414	0209977	CERAMIC CHIP 0.015UF+-10% 50V
C 415	0201059	CERAMIC CHIP 0.0033UF+-10% 50V
C 419	0201062	CERAMIC CHIP 0.0068UF+-10% 50V
C 421	0201057	CERAMIC CHIP 0.0022UF+-10% 50V
C 423	0201035	CERAMIC CHIP 220PF+-5% 50V
C 506L	0201069	CERAMIC CHIP 0.1UF+80-20% 25V
C 506R	0201069	CERAMIC CHIP 0.1UF+80-20% 25V
C 521	0201031	CERAMIC CHIP 100PF+-5% 50V
C 524L	0201054	CERAMIC CHIP 1000PF+-10% 50V
C 524R	0201054	CERAMIC CHIP 1000PF+-10% 50V
C 525L	0201054	CERAMIC CHIP 1000PF+-10% 50V
C 525R	0201054	CERAMIC CHIP 1000PF+-10% 50V
C 526L	0201054	CERAMIC CHIP 1000PF+-10% 50V
C 526R	0201054	CERAMIC CHIP 1000PF+-10% 50V
C 527L	0201059	CERAMIC CHIP 0.0033UF+-10% 50V
C 527R	0201059	CERAMIC CHIP 0.0033UF+-10% 50V
C 528L	0201007	CERAMIC CHIP 0.01UF+-20% 50V
C 528R	0201007	CERAMIC CHIP 0.01UF+-20% 50V
C 530L	0201065	CERAMIC CHIP 0.022UF+-10% 25V
C 530R	0201065	CERAMIC CHIP 0.022UF+-10% 25V
C 532L	0201065	CERAMIC CHIP 0.022UF+-10% 25V
C 532R	0201065	CERAMIC CHIP 0.022UF+-10% 25V
C 533L	0201057	CERAMIC CHIP 0.0022UF+-10% 50V
C 533R	0201057	CERAMIC CHIP 0.0022UF+-10% 50V
C 534L	0201062	CERAMIC CHIP 0.0068UF+-10% 50V
C 534R	0201062	CERAMIC CHIP 0.0068UF+-10% 50V
C 536	0201007	CERAMIC CHIP 0.01UF+-20% 50V
C 539L	0201031	CERAMIC CHIP 100PF+-5% 50V
C 540L	0201065	CERAMIC CHIP 0.022UF+-10% 25V
C 540R	0201065	CERAMIC CHIP 0.022UF+-10% 25V
C 541L	0201007	CERAMIC CHIP 0.01UF+-20% 50V
C 541R	0201007	CERAMIC CHIP 0.01UF+-20% 50V
C 542	0201007	CERAMIC CHIP 0.01UF+-20% 50V
C 546	0201037	CERAMIC CHIP 330PF+-5% 50V
C 555	0201065	CERAMIC CHIP 0.022UF+-10% 25V
C 559	0201065	CERAMIC CHIP 0.022UF+-10% 25V
C 561	0201031	CERAMIC CHIP 100PF+-5% 50V
C 563	0201007	CERAMIC CHIP 0.01UF+-20% 50V
C 565	0201069	CERAMIC CHIP 0.1UF+80-20% 25V
C 611	0890035	CERAMIC DISC 1000PF 50V
C 614	0890014	CERAMIC DISC 27PF+-50% 50V
C 618	0890035	CERAMIC DISC 1000PF 50V
C 619	0890043	CERAMIC DISC 0.01UF+-20% 16V
C 621	0890026	CERAMIC DISC 220PF+-10% 50V
C 622	0890044	CERAMIC DISC 0.022UF+80-20% 25V
C 623	0890038	CERAMIC DISC 3300PF+-20% 16V
C 624	0890044	CERAMIC DISC 0.022UF+80-20% 25V
C 632	0890101	CERAMIC DISC 0.01UF+-20% 16V
C 653	0890043	CERAMIC DISC 0.01UF+-20% 16V
C 672	0890045	CERAMIC DISC 0.047UF+80-20% 50V
C 674	0890045	CERAMIC DISC 0.04UF+80-20% 50V
C 675	0890043	CERAMIC DISC 0.01UF+-20% 16V
C 676	0890022	CERAMIC DISC 100PF+-10% 50V
C 762	0890044	CERAMIC DISC 0.022UF+80-20% 25V
C 764	0256711	ELECTROLYTIC 47UF 6.3V
C 767	0890045	CERAMIC DISC 0.047UF+80-20% 50V
C 768	0890044	CERAMIC DISC 0.022UF+80-20% 25V
C 770	0890045	CERAMIC DISC 0.04UF+80-20% 50V
C 771	0890009	CERAMIC DISC 12PF+-5% 50V
C 772	0890015	CERAMIC DISC 33PF+-50% 50V
C 773	0256626	ELECTROLYTIC 47UF 6.3V
C 774	0890102	CERAMIC DISC 0.022UF+80-20% 50V
C 778	0890103	CERAMIC DISC 47000PF+80-20% 12V
C 780	0890045	CERAMIC DISC 0.04UF+80-20% 50V

SYMBOL-NO	P-NO	DESCRIPTION
C 802	0890044	CERAMIC DISC 0.022UF+80-20% 25V
C 804	0890045	CERAMIC DISC 0.047UF+80-20% 50V
C 805	0890039	CERAMIC DISC 4700PF+-20% 16V
C 808	0890035	CERAMIC DISC 1000PF 50V
C 809	0890046	CERAMIC DISC 0.1UF+80-20% 50V
C 851	0890102	CERAMIC DISC 0.022UF+80-20% 50V
C 852	0890102	CERAMIC DISC 0.022UF+80-20% 50V
C 853	0890102	CERAMIC DISC 0.022UF+80-20% 50V
C 854	0256787	ELECTROLYTIC 4700UF 25V
C 855	0890102	CERAMIC DISC 0.022UF+80-20% 50V
C 856	0256862	ELECTROLYTIC 2200UF 25V
C 857	0256862	ELECTROLYTIC 2200UF 25V
C 861	0256858	ELECTROLYTIC 1000UF 10V
C 866	0890102	CERAMIC DISC 0.022UF+80-20% 50V
C 869	0890102	CERAMIC DISC 0.022UF+80-20% 50V
C 871	0256858	ELECTROLYTIC 1000UF 10V
C 901	0890045	CERAMIC DISC 0.047UF+80-20% 50V
C 904	0890035	CERAMIC DISC 1000PF 50V
C 908	0890044	CERAMIC DISC 0.022UF+80-20% 25V
C 909	0890043	CERAMIC DISC 0.01UF+-20% 16V
C 910	0890043	CERAMIC DISC 0.01UF+-20% 16V
C 911	0890043	CERAMIC DISC 0.01UF+-20% 16V
C 914	0890044	CERAMIC DISC 0.022UF+80-20% 25V
C 971	0890045	CERAMIC DISC 0.047UF+80-20% 50V
C 973	0890035	CERAMIC DISC 1000PF 50V
C 974	0890043	CERAMIC DISC 0.01UF+-20% 16V
C1302	0201065	CERAMIC CHIP 0.022UF+-10% 25V
C1402	0890044	CERAMIC DISC 0.022UF+80-20% 25V
C1404	0890044	CERAMIC DISC 0.022UF+80-20% 25V
C1408	0890034	CERAMIC DISC 820PF+-10% 5V
C1409	0890037	CERAMIC DISC 2200PF+-20% 16V
C1410	0256151	ELECTROLYTIC 1UF 50V
C1413	0890022	CERAMIC DISC 100PF+-10% 50V
C1418	0890017	CERAMIC DISC 47PF+-5% 50V
C1419	0208402	CERAMIC DISC 47PF+-5% 50V
C1420	0890018	CERAMIC DISC 56PF+-50% 50V
C1421	0890018	CERAMIC DISC 56PF+-50% 50V
C1422	0890022	CERAMIC DISC 100PF+-10% 50V
C1423	0890022	CERAMIC DISC 100PF+-10% 50V
C1424	0890009	CERAMIC DISC 12PF+-5% 50V
C1425	0890009	CERAMIC DISC 12PF+-5% 50V
C1426	0890035	CERAMIC DISC 1000PF 50V
C1428	0890044	CERAMIC DISC 0.022UF+80-20% 25V
C1504	0890043	CERAMIC DISC 0.01UF+-20% 16V
C1511	0890038	CERAMIC DISC 3300PF+-20% 16V
C1512	0890043	CERAMIC DISC 0.01UF+-20% 16V
C1532	0201065	CERAMIC CHIP 0.022UF+-10% 25V
C1538	0201065	CERAMIC CHIP 0.022UF+-10% 25V
C1655	0256825	ELECTROLYTIC 10UF 6.3V
C1656	0256825	ELECTROLYTIC 10UF 6.3V
C1853	0256635	ELECTROLYTIC 220UF 50V
C1855	0890044	CERAMIC DISC 0.022UF+80-20% 25V
C1856	0890022	CERAMIC DISC 100PF+-10% 50V
C1858	0890046	CERAMIC DISC 0.1UF+80-20% 50V
C1860	0890046	CERAMIC DISC 0.1UF+80-20% 50V
C1861	0890046	CERAMIC DISC 0.1UF+80-20% 50V
C1862	0890046	CERAMIC DISC 0.1UF+80-20% 50V
C1971	0890013	CERAMIC DISC 22PF+-5% 50V
C1972	0890015	CERAMIC DISC 33PF+-50% 50V
C1973	0890032	CERAMIC 560PF+-10% 50V
C1974	0890043	CERAMIC DISC 0.01UF+-20% 16V
C1976	0890043	CERAMIC DISC 0.01UF+-20% 16V
C1979	0890019	CERAMIC DISC 68PF+-50% 50V
C2752	0256155	ELECTROLYTIC 10UF 16V
C2753	0256151	ELECTROLYTIC 1UF 50V
C2755	0890044	CERAMIC DISC 0.022UF+80-20% 25V
C2756	0890035	CERAMIC DISC 1000PF 50V

RESISTORS

SYMBOL-NO	P-NO	DESCRIPTION
R 201	0103845	CHIP RESISTOR 1.5KOHM+-5% 0.1W
R 202	0103857	CHIP RESISTOR 15KOHM+-5% 0.1W
R 203	0103854	CHIP RESISTOR 8.2KOHM+-5% 0.1W
R 204	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W
R 205	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 206	0103844	CHIP RESISTOR 1.2KOHM+-5% 0.1W
R 207	0103861	CHIP RESISTOR 33KOHM+-5% 0.1W
R 208	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W
R 209	0103839	CHIP RESISTOR 470OHM+-5% 0.1W
R 210	0103839	CHIP RESISTOR 470OHM+-5% 0.1W
R 211	0103840	CHIP RESISTOR 560 OHM+-5% 0.1W
R 212	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R 213	0103839	CHIP RESISTOR 470OHM+-5% 0.1W
R 214	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R 215	0103869	CHIP RESISTOR 150KOHM+-5% 0.1W
R 216	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R 217	0103844	CHIP RESISTOR 1.2KOHM+-5% 0.1W
R 219	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R 220	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R 221	0103831	CHIP RESISTOR 100 OHM+-5% 0.1W
R 222	0103840	CHIP RESISTOR 560 OHM+-5% 0.1W
R 224	0103873	CHIP RESISTOR 330KOHM+-5% 0.1W
R 225	0103868	CHIP RESISTOR 120KOHM+-5% 0.1W
R 226	0103841	CHIP RESISTOR 680 OHM+-5% 0.1W
R 227	0103877	CHIP RESISTOR 680KOHM+-5% 0.1W
R 228	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 229	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 230	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W
R 231	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W
R 232	0103844	CHIP RESISTOR 1.2KOHM+-5% 0.1W
R 233	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R 235	0103842	CHIP RESISTOR 820 OHM+-5% 0.1W
R 236	0103841	CHIP RESISTOR 680 OHM+-5% 0.1W
R 237	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R 238	0103867	CHIP RESISTOR 100KOHM+-5% 0.1W
R 244	0103844	CHIP RESISTOR 1.2KOHM+-5% 0.1W
R 245	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 246	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 247	0103863	CHIP RESISTOR 47KOHM+-5% 0.1W
R 248	0103863	CHIP RESISTOR 47KOHM+-5% 0.1W
R 249	0103849	CHIP RESISTOR 3.3KOHM+-5% 0.1W
R 250	0103848	CHIP RESISTOR 2.7KOHM+-5% 0.1W
R 251	0103839	CHIP RESISTOR 470OHM+-5% 0.1W
R 252	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R 253	0103844	CHIP RESISTOR 1.2KOHM+-5% 0.1W
R 254	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 255	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R 256	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R 257	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W
R 258	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W
R 259	0103844	CHIP RESISTOR 1.2KOHM+-5% 0.1W
R 260	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R 261	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 262	0103853	CHIP RESISTOR 6.8KOHM+-5% 0.1W
R 266	0103832	CHIP RESISTOR 120OHM+-5% 0.1W
R 267	0103842	CHIP RESISTOR 820 OHM+-5% 0.1W
R 268	0103863	CHIP RESISTOR 47KOHM+-5% 0.1W
R 269	0103856	CHIP RESISTOR 12KOHM+-5% 0.1W
R 270	0103861	CHIP RESISTOR 33KOHM+-5% 0.1W
R 271	0103860	CHIP RESISTOR 27KOHM+-5% 0.1W

SYMBOL-NO	P-NO	DESCRIPTION
R 272	0103860	CHIP RESISTOR 27KOHM+-5% 0.1W
R 273	0103845	CHIP RESISTOR 1.5KOHM+-5% 0.1W
R 274	0103839	CHIP RESISTOR 470OHM+-5% 0.1W
R 275	0103848	CHIP RESISTOR 2.7KOHM+-5% 0.1W
R 276	0103857	CHIP RESISTOR 15KOHM+-5% 0.1W
R 277	0103832	CHIP RESISTOR 120OHM+-5% 0.1W
R 278	0103834	CHIP RESISTOR 180OHM+-5% 0.1W
R 281	0103838	CHIP RESISTOR 390 OHM+-5% 0.1W
R 401	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R 402	0103864	CHIP RESISTOR 56KOHM+-5% 0.1W
R 403	0103850	CHIP RESISTOR 3.9KOHM+-5% 0.1W
R 404	0103837	CHIP RESISTOR 330 OHM+-5% 0.1W
R 405	0103838	CHIP RESISTOR 390 OHM+-5% 0.1W
R 406	0103839	CHIP RESISTOR 470OHM+-5% 0.1W
R 407	0103860	CHIP RESISTOR 27KOHM+-5% 0.1W
R 408	0103860	CHIP RESISTOR 27KOHM+-5% 0.1W
R 409	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W
R 410	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W
R 411	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W
R 412	0103819	CHIP RESISTOR 10 OHM+-5% 0.1W
R 413	0103864	CHIP RESISTOR 56KOHM+-5% 0.1W
R 414	0103835	CHIP RESISTOR 220 OHM+-5% 0.1W
R 415	0103871	CHIP RESISTOR 220KOHM+-5% 0.1W
R 416	0103852	CHIP RESISTOR 5.6KOHM+-5% 0.1W
R 417	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R 418	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R 419	0103869	CHIP RESISTOR 150KOHM+-5% 0.1W
R 420	0103937	CHIP RESISTOR 1.5KOHM+-5% 1/8W
R 421	0103875	CHIP RESISTOR 470KOHM+-5% 0.1W
R 422	0103848	CHIP RESISTOR 2.7KOHM+-5% 0.1W
R 424	0103862	CHIP RESISTOR 39KOHM+-5% 0.1W
R 425	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R 426	0103850	CHIP RESISTOR 3.9KOHM+-5% 0.1W
R 429	0103860	CHIP RESISTOR 27KOHM+-5% 0.1W
R 430	0103939	CHIP RESISTOR 2.2KOHM+-5% 1/8W
R 431	0103955	CHIP RESISTOR 47KOHM+-5% 1/8W
R 432	0103867	CHIP RESISTOR 100KOHM+-5% 0.1W
R 501L	0103860	CHIP RESISTOR 27KOHM+-5% 0.1W
R 501R	0103860	CHIP RESISTOR 27KOHM+-5% 0.1W
R 503L	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 503R	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 505L	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 505R	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 506L	0103863	CHIP RESISTOR 47KOHM+-5% 0.1W
R 506R	0103863	CHIP RESISTOR 47KOHM+-5% 0.1W
R 509L	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R 509R	0103939	CHIP RESISTOR 2.2KOHM+-5% 1/8W
R 510L	0103860	CHIP RESISTOR 27KOHM+-5% 0.1W
R 510R	0103860	CHIP RESISTOR 27KOHM+-5% 0.1W
R 511L	0103861	CHIP RESISTOR 33KOHM+-5% 0.1W
R 513L	0103852	CHIP RESISTOR 5.6KOHM+-5% 0.1W
R 513R	0103852	CHIP RESISTOR 5.6KOHM+-5% 0.1W
R 514L	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R 514R	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R 515L	0103954	CHIP RESISTOR 39KOHM+-5% 1/8W
R 515R	0103862	CHIP RESISTOR 39KOHM+-5% 0.1W
R 516	0103971	CHIP RESISTOR 1MOHM+-5% 1/8W
R 518L	0103861	CHIP RESISTOR 33KOHM+-5% 0.1W
R 518R	0103861	CHIP RESISTOR 33KOHM+-5% 0.1W
R 519	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R 520	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R 522L	0103867	CHIP RESISTOR 100KOHM+-5% 0.1W
R 522R	0103867	CHIP RESISTOR 100KOHM+-5% 0.1W
R 523L	0103852	CHIP RESISTOR 5.6KOHM+-5% 0.1W
R 523R	0103852	CHIP RESISTOR 5.6KOHM+-5% 0.1W
R 524L	0103858	CHIP RESISTOR 18KOHM+-5% 0.1W
R 524R	0103858	CHIP RESISTOR 18KOHM+-5% 0.1W
R 525L	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R 525R	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R 526L	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R 526R	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R 527L	0103841	CHIP RESISTOR 680 OHM+-5% 0.1W
R 527R	0103841	CHIP RESISTOR 680 OHM+-5% 0.1W
R 528L	0103842	CHIP RESISTOR 820 OHM+-5% 0.1W
R 528R	0103842	CHIP RESISTOR 820 OHM+-5% 0.1W
R 529L	0103842	CHIP RESISTOR 820 OHM+-5% 0.1W
R 529R	0103842	CHIP RESISTOR 820 OHM+-5% 0.1W
R 530	0103881	CHIP RESISTOR 2.2MOHM+-10% 0.1W
R 531	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R 532	0103854	CHIP RESISTOR 8.2KOHM+-5% 0.1W
R 533	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R 534	0103856	CHIP RESISTOR 12KOHM+-5% 0.1W
R 535	0103873	CHIP RESISTOR 330KOHM+-5% 0.1W
R 536	0103857	CHIP RESISTOR 15KOHM+-5% 0.1W
R 537	0103862	CHIP RESISTOR 39KOHM+-5% 0.1W
R 538	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R 539L	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 539R	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 541L	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 541R	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 542L	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R 542R	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R 543	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R 544L	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W
R 545	0103849	CHIP RESISTOR 3.3KOHM+-5% 0.1W
R 548L	0103853	CHIP RESISTOR 6.8KOHM+-5% 0.1W
R 548R	0103853	CHIP RESISTOR 6.8KOHM+-5% 0.1W
R 550	0103835	CHIP RESISTOR 220 OHM+-5% 0.1W
R 554	0103845	CHIP RESISTOR 1.5KOHM+-5% 0.1W
R 656	0101738	METAL FILM 3.3KOHM 1/8W
R 660	0101734	METAL FILM 33KOHM 1/8W
R 679	0101731	METAL FILM 2.05KOHM 1/8W
R 683	0101739	METAL FILM 4.12KOHM 1/8W
R 685	0101732	METAL FILM 8.2KOHM 1/8W
R 686	0101733	METAL FILM 16.5KOHM 1/8W
R 692	0101734	METAL FILM 33KOHM 1/8W
R 693	0101735	METAL FILM 68KOHM 1/8W
R 694	0101736	METAL FILM 120KOHM 1/8W
R 695	0101737	METAL FILM 220KOHM 1/8W
R 851	0134706	COMPOSITION 3.3MOHM 1/2W(FOR AW)
⚠ R 852	0170492	FUSE RESISTOR 6.8 OHM 1/4W
⚠ R 860	0170481	FUSE RESISTOR 220HM+-5% 1/4W
RT 201	5030003	SEMI VARIABLE 470OHM
RT 202	5006235	SEMI VARIABLE 2.2KOHM
RT 203	5006234	SEMI VARIABLE 1KOHM
RT 204	5035071	SEMI VARIABLE 100 OHM
RT 301	5035025	SEMI VARIABLE 2.2KOHM
RT 401	5006242	SEMI VARIABLE 220KOHM
RT 501L	5035077	SEMI VARIABLE 10KOHM
RT 501R	5035077	SEMI VARIABLE 10KOHM
RT 502L	5006239	SEMI VARIABLE 47KOHM
RT 502R	5006239	SEMI VARIABLE 47KOHM
RT 601	5035032	SEMI VARIABLE 220KOHM
RT 602	5035029	SEMI VARIABLE 47KOHM
RT 651	5035031	SEMI VARIABLE 100KOHM
RT 652	5035027	SEMI VARIABLE 10KOHM
RT 801	5035028	SEMI VARIABLE 22KOHM
RT1401	5035025	SEMI VARIABLE 2.2KOHM
RV 751	5020223	VARIABLE 20KOHM
RV 752	5002091	VARIABLE 10KOHM

SYMBOL-NO	P-NO	DESCRIPTION
RV 753	5002092	VARIABLE 10KOHM
RV 754	5002094	VARIABLE 500 OHM
		SEMI CONDUCTORS
D 141	5380933	LED GL-451V
D 201	5339131	DIODE 1SS254
D 202	5328951	DIODE DAN202K-N
D 205	5339131	DIODE 1SS254
D 207	5339131	DIODE 1SS254
D 208	5339131	DIODE 1SS254
D 209	5339131	DIODE 1SS254
D 306	5339131	DIODE 1SS254
D 307	5339131	DIODE 1SS254
D 401	5328951	DIODE DAN202K
D 402	5328321	DIODE MA151K (MH)
D 403	5328321	DIODE MA151K (MH)
D 522	5339131	DIODE 1SS254
D 601	5339381	DIODE ERA81-004
D 602	5339131	DIODE 1SS254
D 651	5339131	DIODE 1SS254
D 655	5339131	DIODE 1SS254
D 671	5339131	DIODE 1SS254
D 672	5339131	DIODE 1SS254
D 673	5339131	DIODE 1SS254
D 674	5339131	DIODE 1SS254
D 675	5339131	DIODE 1SS254
D 676	5339131	DIODE 1SS254
D 677	5339131	DIODE 1SS254
D 678	5339131	DIODE 1SS254
D 679	5339131	DIODE 1SS254
D 751	5381001	LED SLR-34URC5
D 752	5381002	LED SLR-34MC5
D 753	5339131	DIODE 1SS254
D 754	5336691	LED SEL3510G
D 755	5336692	LED SEL3810D
D 756	5336692	LED SEL3810D
D 761	5339381	DIODE ERA81
D 762	5339381	DIODE ERA81
D 765	5339131	DIODE 1SS254
D 766	5339131	DIODE 1SS254
D 769	5339131	DIODE 1SS254
D 770	5339131	DIODE 1SS254
D 771	5339131	DIODE 1SS254
D 772	5339131	DIODE 1SS254
D 773	5339131	DIODE 1SS254
D 774	5339131	DIODE 1SS254
D 775	5339131	DIODE 1SS254
D 776	5339131	DIODE 1SS254
D 777	5339131	DIODE 1SS254
D 778	5339131	DIODE 1SS254
⚠ D 852	5336371	DIODE RBA406B
D 854	5339231	DIODE 1SR35-100A
D 855	5339231	DIODE 1SR35-100A
⚠ D 856	5339241	DIODE EK14
⚠ D 857	5339241	DIODE EK14
⚠ D 858	5339241	DIODE EK14
⚠ D 859	5339241	DIODE EK14
⚠ D 860	5333351	DIODE D3SBA10
D 862	5339231	DIODE 1SR35-100A
D 863	5339231	DIODE 1SR35-100A
D 871	5339231	DIODE 1SR35-100A
D 896	5339231	DIODE 1SR35-100A
D 897	5330501	DIODE U0-5B SI 60HZ 3MW (FOR AW)
D 898	5330501	DIODE U0-5B SI 60HZ 3MW (FOR AW)
D 899	5330501	DIODE U0-5B SI 60HZ 3MW (FOR AW)
D 901	5339231	DIODE 1SR35-100A
D 902	5339381	DIODE ERA81-004
D 904	5339131	DIODE 1SS254
D 911	5339131	DIODE 1SS254
D 912	5339131	DIODE 1SS254
D 913	5339131	DIODE 1SS254
D 916	5333891	DIODE ISR35-2A
D1402	5339131	DIODE 1SS254
D1403	5339131	DIODE 1SS254
D1404	5339131	DIODE 1SS254
D1851	5339171	DIODE 1SS130M
D1852	5339171	DIODE 1SS130M
D1854	5339171	DIODE 1SS130M
D1855	5339171	DIODE 1SS130M
D1856	5339131	DIODE 1SS254
D1859	5332541	DIODE ERA81-004
D2759	5339131	DIODE 1SS254
D2760	5339131	DIODE 1SS254
IC 141	5333953	IC ON2170QR
IC 142	5333953	IC ON2170QR
IC 201	1371063	IC HT4932B
IC 202	1360231	IC MSM7400RS
IC 203	5364309	IC RC78M05E
IC 204	1360081	IC HA11810BNT
IC 205	1378514	PWB ASSY COLOR LEVEL(HTS7518C)
IC 206	1380941	PWB ASSY COLOR NR(HES8089)
IC 301	1341691	IC NJM2234S
IC 302	1342032	IC NJM2249S
IC 401	1341492	IC BA7767AS
IC 401	1341493	IC XRA7767A
IC 501	1360051	IC BA7730S
IC 502	1350921	IC BA7700KI
IC 502	1350922	IC XRA7700K
IC 503	5364601	IC M5278L-05
IC 601	1360041	IC HD49741NT
IC 651	5366581	IC BA6303
IC 652	5359901	IC UPD4066C
IC 671	1345121	IC M50747-803
IC 672	5359901	IC UPD4066C
IC 751	1345084	IC M50959-225SP
IC 752	5301561	IC M6M80021P
IC 753	1340002	IC S-8053ALB
IC 851	1387941	IC STK7271
IC 901	1345156	IC HD404019A16S
IC 902	5300794	IC BA6209U4
IC 902	5300795	IC XRA6209U
IC 903	1380302	PWB ASSY END/REEL SIG.AMP(BX7716)
IC 904	1340112	IC PST520C-2T
IC 971	1345212	IC M50727-141SP
IC1301	1388131	PWB ASSY AUDIO MPX(SBX1475-01)
IC1401	5301257	IC M50554-149SP
IC1402	1340021	IC NJM2229S
IC1403	5364601	IC M5278L-05
IC1501	5366911	IC BA6138
IC1511	5362041	IC BU4053 (FOR LINE SELECTOR)
IC1531	5350607	IC RC4558
IC1532	5350607	IC RC4558
IC1651	1360071	IC BA6459PI
IC1651	1360072	IC XRA6459P
IC1851	1341953	IC M5278D12

SYMBOL-NO	P-NO	DESCRIPTION
IC1971	1380621	PWB ASSY HES8079
IC2751	5350607	IC RC4558
Q 141	5324661	TRANSISTOR PT-483F1
Q 142	5324661	TRANSISTOR PT-483F1
Q 201	5328793	TRANSISTOR DTC144K-26
Q 202	5328793	TRANSISTOR DTC144K-26
Q 203	5328961	TRANSISTOR 2SA1037KERS
Q 205	5328971	TRANSISTOR 2SC2412KBRST
Q 206	5328793	TRANSISTOR DTC144K-26
Q 207	5328971	TRANSISTOR 2SC2412KBRST
Q 208	5328961	TRANSISTOR 2SA1037KERS
Q 210	5328971	TRANSISTOR 2SC2412KBRST
Q 211	5328793	TRANSISTOR DTC144K-26
Q 212	5328793	TRANSISTOR DTC144K-26
Q 213	5328971	TRANSISTOR 2SC2412KBRST
Q 214	5328971	TRANSISTOR 2SC2412KBRST
Q 215	5328961	TRANSISTOR 2SA1037KERS
Q 217	5328971	TRANSISTOR 2SC2412KBRST
Q 218	5328971	TRANSISTOR 2SC2412KBRST
Q 219	5328793	TRANSISTOR DTC144K-26
Q 220	5328961	TRANSISTOR 2SA1037KERS
Q 301	1320004	TRANSISTOR 2SA854SQR
Q 302	1320004	TRANSISTOR 2SA854SQR
Q 304	5327073	TRANSISTOR DTC144ES
Q 305	5327073	TRANSISTOR DTC144ES
Q 307	5327073	TRANSISTOR DTC144ES
Q 403	5328971	TRANSISTOR 2SC2412KBRST
Q 404	5328793	TRANSISTOR DTC144K-26
Q 405	5328793	TRANSISTOR DTC144K-26
Q 406	5327101	TRANSISTER 2SC3553BC
Q 407	5328971	TRANSISTOR 2SC2412KBRST
Q 501L	5328971	TRANSISTOR 2SC2412KBRST
Q 501R	5328971	TRANSISTOR 2SC2412KBRST
Q 502L	5328971	TRANSISTOR 2SC2412KBRST
Q 502R	5328971	TRANSISTOR 2SC2412KBRST
Q 521	5328793	TRANSISTOR DTC144K-26
Q 522	5328971	TRANSISTOR 2SC2412KBRST
Q 601	5327073	TRANSISTOR DTC144ES
Q 602	5327072	TRANSISTER DTA124ES
Q 603	5327073	TRANSISTOR DTC144ES
Q 604	5327063	TRANSISTOR 2SC1740S
Q 605	5327073	TRANSISTOR DTC144ES
Q 651	5327063	TRANSISTOR 2SC1740S
Q 652	5327073	TRANSISTOR DTC144ES
Q 671	5327063	TRANSISTOR 2SC1740S
Q 672	5327073	TRANSISTOR DTC144ES
Q 753	5327061	TRANSISTOR 2SC1740S-ST
Q 754	5327061	TRANSISTOR 2SC1740S-ST
Q 759	5323562	TRANSISTOR DTA124F
Q 760	5327061	TRANSISTOR 2SC1740S-ST
Q 761	5327061	TRANSISTOR 2SC1740S-ST
Q 762	5327061	TRANSISTOR 2SC1740S-ST
Q 763	1320004	TRANSISTOR 2SA854SQR
Q 803	5327071	TRANSISTOR DTC124ES
Q 851	5327261	TRANSISTOR 2SB1326(Q)
Q 852	5327071	TRANSISTOR DTC124ES
Q 902	5327091	TRANSISTER 2SD1504E
Q 904	5327073	TRANSISTOR DTC144ES
Q1401	1320004	TRANSISTOR 2SA854SQR
Q1403	5327063	TRANSISTOR 2SC1740S
Q1404	5327073	TRANSISTOR DTC144ES
Q1405	5327073	TRANSISTOR DTC144ES
Q1406	5327073	TRANSISTOR DTC144ES
Q1407	5327074	TRANSISTOR DTA144ES-T
Q1511	5327101	TRANSISTER 2SC3553BC
Q1512	1320003	TRANSISTOR 2SA854(S)
Q1513	5327073	TRANSISTOR DTC144ES
Q1514	5327073	TRANSISTOR DTC144ES
Q1531L	5328971	TRANSISTOR 2SC2412KBRST
Q1531R	5328971	TRANSISTOR 2SC2412KBRST
Q1851	1320004	TRANSISTOR 2SA854SQR
Q1852	5327161	TRANSISTOR DTC143ZS
Q1853	5327072	TRANSISTER DTA124ES
Q1854	5327073	TRANSISTOR DTC144ES
Q1857	1320004	TRANSISTOR 2SA854SQR
Q1858	5327073	TRANSISTOR DTC144ES
Q1860	5327063	TRANSISTOR 2SC1740S
Q1861	5324861	TRANSISTOR 2SD2061
Q1862	5327063	TRANSISTOR 2SC1740S
Q1863	1320004	TRANSISTOR 2SA854SQR
Q1864	5327073	TRANSISTOR DTC144ES
Q1865	5327073	TRANSISTOR DTC144ES
Q1971	5327063	TRANSISTOR 2SC1740S
Q1972	5327063	TRANSISTOR 2SC1740S
Q1973	5327063	TRANSISTOR 2SC1740S
Q1974	5327063	TRANSISTOR 2SC1740S
Q8802	5321666	TRANSISTOR 2SC2621SE
ZD 301	5339282	ZENER DIODE HZS6-B2
ZD 303	5339274	ZENER DIODE HZS15-3
ZD 763	5339254	ZENER DIODE HZS30-1
ZD 767	5339262	ZENER DIODE HZS6-C2
ZD 768	5339262	ZENER DIODE HZS6-C2
ZD 801	5366151	ZENER DIODE UPC574J
ZD 802	5339264	ZENER DIODE HZS2B1
ZD 851	5339278	ZENER DIODE HZS22-2 (FOR AW)
ZD 901	5339281	ZENER DIODE HZS11-A2
ZD 903	5339272	ZENER DIODE HZS6-A3
ZD 904	5330395	ZENER DIODE H26A3
ZD 971	5339272	ZENER DIODE HZS6-A3
ZD1851	5339274	ZENER DIODE HZS15-3
ZD2754	5339262	ZENER DIODE HZS6-C2
		TRANSFORMERS
T 401	5261462	OSCILLATOR,BIAS
T 851	5214381	TRANSFORMER,POWER
T1501	5261432	OSCILLATOR,BIAS
		COILS
L 201	5159081	CHOKE COIL 180UH+-10%
L 202	5159158	CHOKE COIL 220UH
L 203	5159143	CHOKE COIL 15UH
L 204	5159145	CHOKE COIL 22UH
L 205	5159152	CHOKE COIL 68UH
L 208	5159089	CHOKE COIL 820UH+-10%
L 209	5159158	CHOKE COIL 220UH
L 210	5159158	CHOKE COIL 220UH
L 211	5159133	COIL,CHOKE 2.2UH+-20%
L 213	5159077	CHOKE COIL 100UH+-10%
L 301	5159077	CHOKE COIL 100UH+-10%
L 302	5159077	CHOKE COIL 100UH+-10%
L 303	5159154	CHOKE COIL 100UH
L 401	5159077	CHOKE COIL 100UH+-10%
L 402	5159111	CHOKE COIL 5.6MH
L 501	5159114	CHOKE COIL 15MH
L 521L	5159077	CHOKE COIL 100UH+-10%
L 521R	5159077	CHOKE COIL 100UH+-10%
L 751	5159077	CHOKE COIL 100UH+-10%

SYMBOL-NO	P-NO	DESCRIPTION
L 801	5159073	CHOKE COIL 47UH+-10%
L 802	5159077	CHOKE COIL 100UH+-10%
L 851	5220232	COIL,CHOKE 200UH
L 852	5220233	COIL,CHOKE 68UH
L1401	5159077	CHOKE COIL 100UH+-10%
L1403	5159147	CHOKE COIL 33UH
L1404	5159147	CHOKE COIL 33UH
L1511	5159077	CHOKE COIL 100UH+-10%
L1971	5159145	CHOKE COIL 22UH
L1972	5159145	CHOKE COIL 22UH
L1973	5159077	CHOKE COIL 100UH+-10%
		CRYSTALS
X 201	5781901	CRYSTAL
X 671	5784478	OSCILLATOR
X 751	5784478	OSCILLATOR
X 752	5780791	CRYSTAL
X 901	5784471	OSCILLATOR
X 971	5784472	OSCILLATOR
X1401	5781793	OSCILLATOR
X1402	5781781	CRYSTAL
		MISCELLANEOUS
BC 851	5272371	LINE FILTER
BL 671	5272373	LINE FILTER
BL 751	5272372	CORE
BL 971	5272373	LINE FILTER
BU 751	5409272	BUZZER
CP 201	5163674	FILTER
CP 202	5163831	FILTER
CP 203	5162754	HIGHT PASS FILTER
CP 204	5169024	LOW PASS FILTER
CP 205	5163281	BAND PASS FILTER
CP 206	5163231	FILTER
CP 207	5163675	FILTER
CP 208	5169041	LOW PASS FILTER
CP 501L	5163101	BAND PASS FILTER
CP 501R	5163102	BAND PASS FILTER
DG 751	5315181	FLUORESCENT INDICATOR TUBU
DL 201	5785944	DELAY,LINE
△FU 851	5721470	FUSE 1.6A (FOR AW)
△FU 851	5721982	FUSE 2A (FOR A)
△FU 852	5721983	FUSE 3A
△FU 853	5721405	FUSE 1.6A
△FU 854	5721412	FUSE 1.25A
JK 301	5690285	JACK PLATE
JK 302	5676602	JACK
JK 501	5690571	PLATE,JACK
JK 751	5673771	JACK
LT 201	5124312	COIL 15UH
QF 201	5721943	IC PROTECTOR N1C
QF 401	5721941	IC PROTECTOR N5
QF1511	5721941	IC PROTECTOR N5
RF 301	5589241	CONVERTER,RF
RM 751	5491523	PWB ASSY IR RECIEVER
PH 601	0217541	THERMISTOR 2.7OHM
S 141	5635321	SWITCH
S 142	5635331	SWITCH
S 751	5622183	SWITCH
S 752	5622183	SWITCH
S 753	5622183	SWITCH
S 763	5635061	SWITCH
S 764	5635161	SWITCH
S 765	5635061	SWITCH
△S 851	5605347	SWITCH (FOR AW)
SWR 751	5610781	SWITCH
TH 851	5390191	THERMISTOR CR8AM8 (FOR AW)

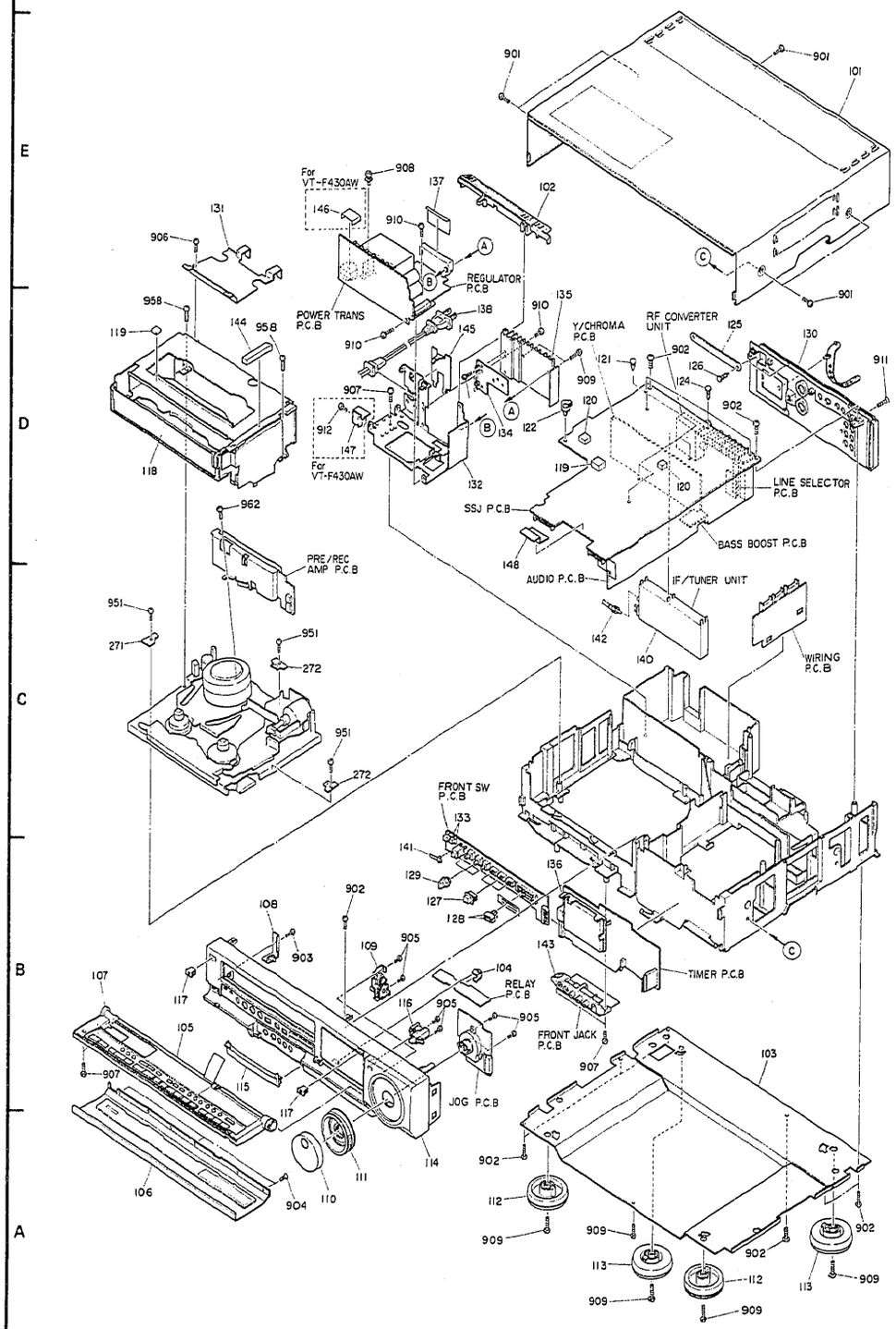
MECHANICAL PARTS LIST

SYMBOL-NO	P-NO	DESCRIPTION
		FOR FINAL ASSEMBLY
101	6005741	COVER,TOP
102	6484412	PIECE,REAR
103	6006671	COVER,BOTTOM (FOR A)
103	6006674	COVER,BOTTOM (FOR AW)
104	6484441	HOLDER
105	5601585	SWITCH
106	6672623	PANEL,DOOR (FOR A)
106	6672624	PANEL,DOOR (FOR AW)
107	6484883	PIECE
108	7442821	BRACKET
109	6809922	DOOR UNIT
110	6089403	KNOB
111	6089433	KNOB
112	6442021	INSULATOR(L)
113	6442031	INSULATOR(R)
114	6485611	PANEL,FRONT
115	6484804	COVER
116	6089373	KNOB
117	6338212	HINGE
118	6249243	DOOR,CASSETTE
119	7744291	FELT,LEG
120	7674011	CUSHION
121	6898241	STUD
122	6803331	HOLDER
124	6714214	NYLON RIVET
125	7708062	STAY,REAR
126	6714213	NYLON RIVET
127	6089361	KNOB
128	6089351	KNOB
129	6089391	KNOB
130	6484793	PANEL,REAR
131	7495241	PLATE,SHIELD
132	4891681	HOLDER (FOR A)
132	4891682	HOLDER (FOR AW)
133	6884821	LED HOLDER
134	7442721	HOLDER
135	6675181	PLATE
136	6809882	HOLDER
137	6597242	RUBBER
△138	5850753	CORD,POWER
140	5588571	TUNER IF BLOCK
141	7441511	PLATE
142	5886334	CORD,PLUG
143	5690772	PLATE,JACK
144	7744691	CUSHION
145	6007091	COVER
146	7709591	COVER (FOR AW)
147	4891541	HOLDER (FOR AW)
148	7709081	SHEET,SHIELD
202	6915922	SCREW
203	7469051	BASE
204	5434061	HEAD
205	6304906	SPRING
206	6522752	SPRING
207	7785673	NUT
208	6820332	BRAKE
209	6555503	SPRING
210	6416021	REEL,SUPPLAY
211	7789123	POLYSLIDER WASHER
212	6416041	REEL,TAKE UP
213	7789123	POLYSLIDER WASHER
214	6975768	ARM,PRESSER ROLLER
215	6807981	BLOCK,SLIDER
216	7412823	PLATE
217	7429651	GEAR,LOADING(L)
218	7429661	GEAR,LOADING(R)
219	6915843	BASE,GUIDE ROLLER(IN)
220	7794883	ROLLER
221	6915861	BASE,GUIDE ROLLER(OUT)
222	6911003	BASE,CYLINDER
223	5445851	HEAD FULL ERASE
224	7795111	ARM
225	4508237	GUIDE,TAPE
226	6555431	SPRING
227	7794952	BAND
228	7469011	ARM
229	6555444	SPRING
230	6897265	BRACKET
231	6896752	ARM
232	6555061	SPRING
234	1378751	PWB ASSY PRE/REC AMP
235	7795161	BLOCK,LOADING
236	7428087	BRACKET
237	7468951	ARM
238	6915891	ARM
239	7468972	ARM
240	7468991	ARM
241	6896906	BRAKE
242	6551152	SPRING
243	6804792	BRAKE
244	7794931	HOLDER
245	6896852	ARM
246	6897251	ARM
247	6555483	SPRING
248	6820151	ARM
249	6437961	GEAR
250	6437981	WHEEL
251	6555052	SPRING
252	7799012	WASHER
259	4508235	GUIDE
260	6806383	SHAFT
261	6915958	ARM
262	6437971	GEAR
263	6820322	BRAKE
264	6320576	SPRING
266	6820103	ARM
267	6556316	SPRING
268	6814316	BRAKE,SUB
271	7429631	BRACKET
272	7429641	BRACKET
273	7788341	WASHER
274	6437873	GEAR
275	6437901	GEAR
276	6440091	GEAR
277	6437893	GEAR
278	6807861	ARM
279	6807853	ARM
280	7469471	BRACKET
301	5571661	MOTOR,CAPSTAN

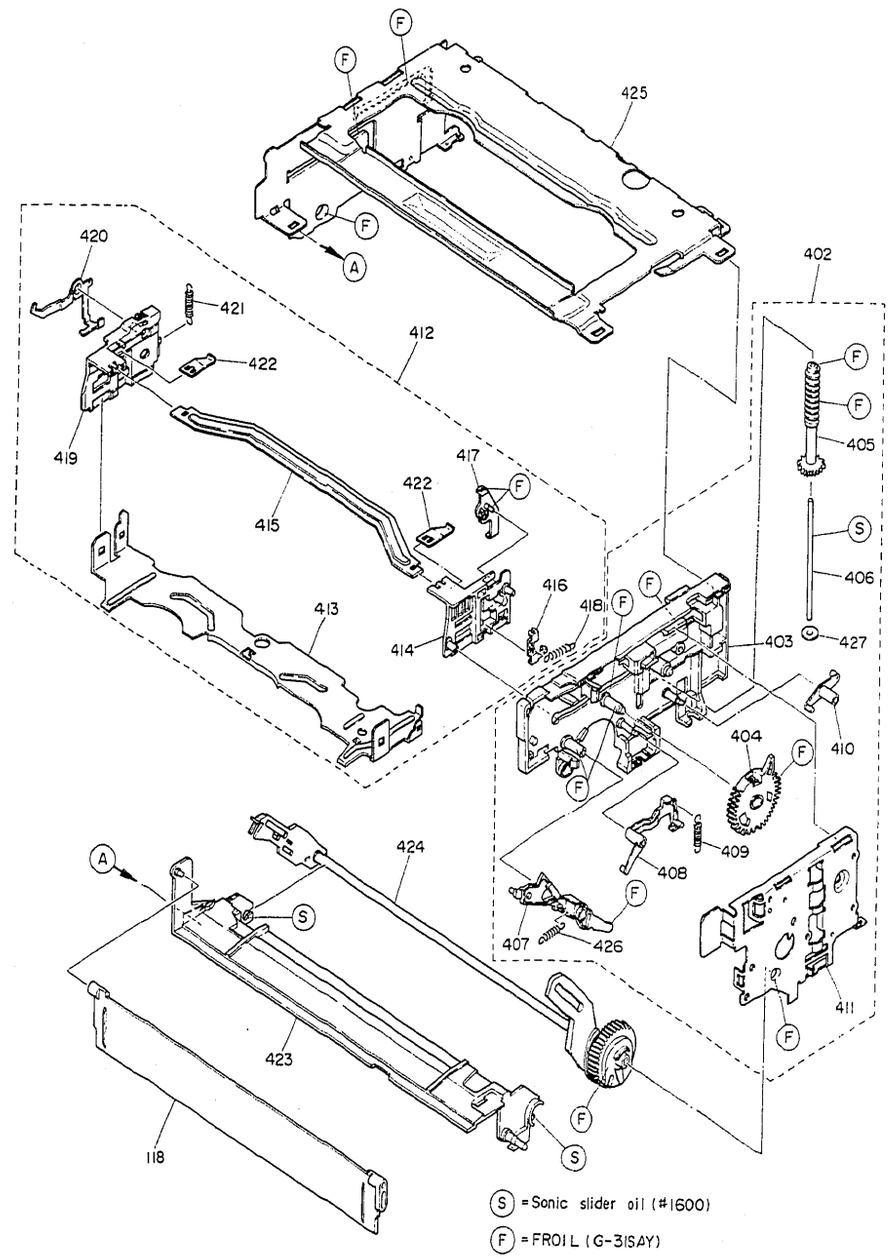
SYMBOL–NO	P–NO	DESCRIPTION
302	6807874	CLUTCH
303	6356571	BELT,REEL
304	6401043	ARM
305	6434852	RACK
402	7412574	BRACKET,SIDE(R)
403	6896685	BRACKET,SIDE(R)
404	6896971	WORM WHEEL ASSY
405	6435571	WORM
406	4508221	WORM SHAFT
407	6896623	ARM,DOOR
408	6896632	ARM-SWITCH
409	6302474	SPRING
410	6897041	ARM-SWITCH
411	7412583	BRACKET-GEAR
412	7449177	HOLDER,CASSETTE
413	7449163	BASE,HOLDER
414	6896664	HOLDER,CASSETTE (R)
415	7428113	HOLDER,STAY
416	6820361	ARM
417	6897001	ARM
418	6355043	SPRING
419	6896673	HOLDER,CASSETTE (L)
420	7412944	ARM
421	6555772	SPRING
422	7412953	SPRING
423	6806521	HOLDER,FRONT
424	7580791	SHAFT ASSY
425	7412552	BRACKET,SIDE(L)
426	6551551	CYLINDER ASSY
427	7794391	WASHER
501	5436173	CYLINDER ASSY
502	5571602	MOTOR,CYLINDER
503	5792634	BRUSH,CYLINDER
901	8699408	SCREW
902	8699412	SCREW (3X12) BLACK
903	8691308	BT SCREW-2.6MMDX8MM
904	8724105	SCREW (2X5)
905	8691308	BT SCREW-2.6MMDX8MM
906	8691406	3X6 BT BIND SCREW
907	8639108	SCREW (2X8)
908	7785351	SCREW (4X14)
909	8699416	SCREW(BT3X16)BLACK
910	8691408	SCREW (3X8)
911	7781582	FALT SCREW-3MMDX10MM(BLACK)
912	8699406	SCREW (3X6)
		(FOR AW)
951	8691410	SCREW
952	8691308	BT SCREW-2.6MMDX8MM
953	8699408	SCREW
954	7781872	SCREW-3MMDX8MM
955	7773086	SCREW
956	8741414	SCREW (3X14)
957	8691412	SCREW (3X12)
958	8691408	SCREW (3X8)
959	8711406	SCREW - 3X6 PAN HEADSCREW
960	8741412	SCREW (B3X12)
961	7785941	SCREW
962	8711404	SCREW - 3X4 PAN HEADSCREW
963	7775581	SCREW(M3X14)
965	8741416	SCREW (3X16)
		FOR ACCESSORIES
801	4636113	OPERATING GUIDE
802	5858851	VCR COAXIAL RF CABLE
803	5856011	CORD
804	5857111	YC CABLE
		FOR REMOTE CONTROLLER UNIT
1	5614801	PANEL
2	5614802	CASE,TOP
3	5614803	CASE,BOTTOM
4	5614804	LID,BATTERY
5	5614805	LED
6	5614806	IC

EXPLODED VIEWS

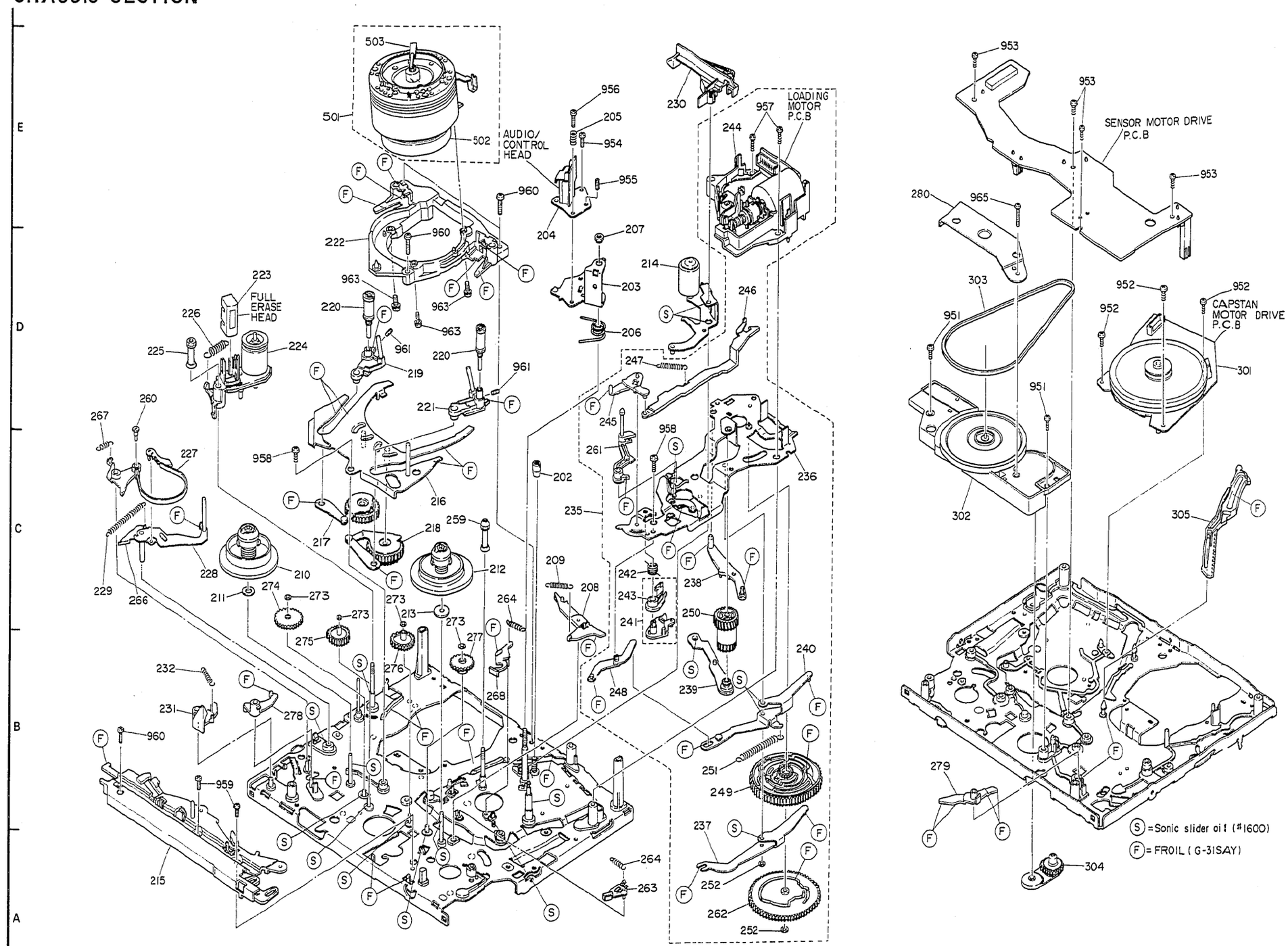
CABINET SECTION



CASSETTE LOADING MECHANISM SECTION



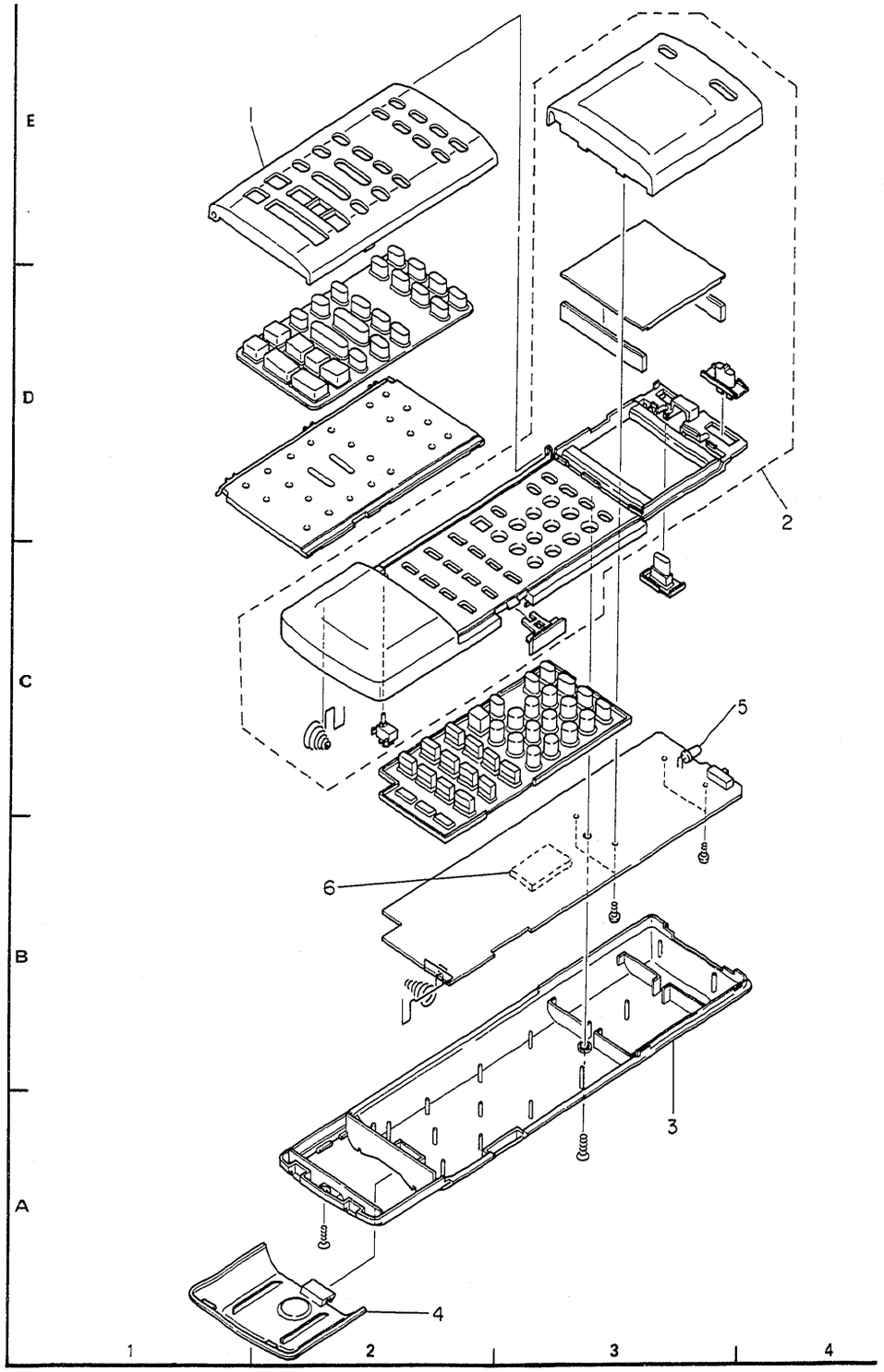
CHASSIS SECTION



1 2 3 4 5 6 7 8

6-11 6-12

REMOTE CONTROL SECTION



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